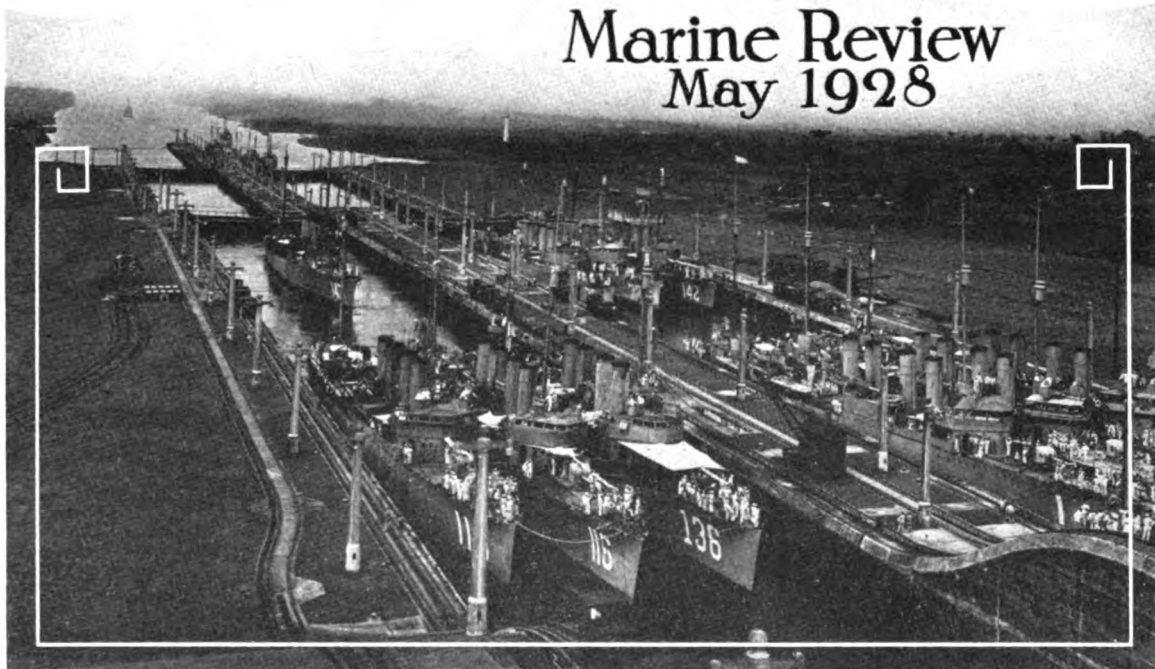




Panama Canal—Destroyers in Transit Gatun Locks—Four to Six are Handled in a Single Lockage

Co-operate on Marine Legislation to Encourage American Shipping

By Lynne M. Lamm

WHETHER any merchant marine legislation is to become law at the present session of congress, which is nearing its close, is a matter of conjecture. At the moment this is written the chances of some kind of legislation on this subject seems favorable. As a matter of fact it is entirely possible that before this issue reaches its readers, the White merchant marine bill may have been passed by the house; but even this does not necessarily mean that a bill will become law at this session. The bill will necessarily have to go to conference following which it will have to be acceptable to both houses of congress and finally be acceptable to the President.

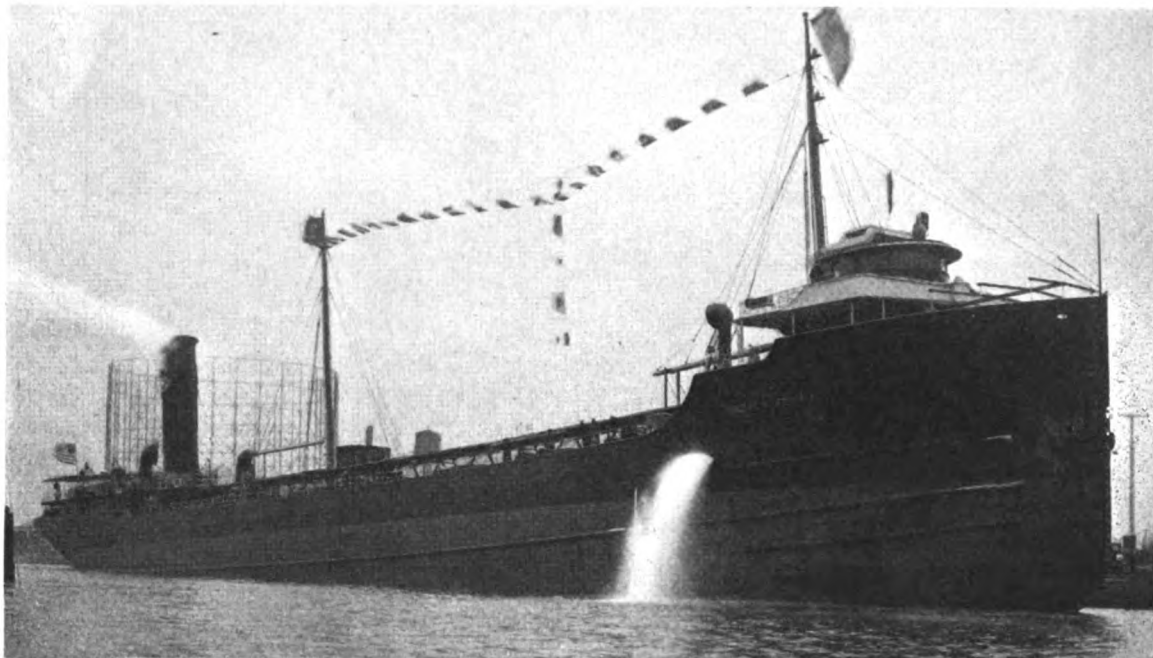
After nearly three weeks of hearings the merchant marine and fisheries committee of the house, of which Representative Wallace H. White Jr. of Maine is chairman, reported out the White bill with changes. The hearings were continued from Feb. 27 to March 14, at which time some of the leading authorities on shipping in the country appeared before the committee and gave their ideas on the White and the other shipping bills which were pending before the committee.

As the White bill came from the house com-

mittee it had stricken out entirely the Jones merchant marine bill which passed the senate on Jan. 27 and which has already been discussed at length in MARINE REVIEW. On the other hand, some of the main features of the Jones bill have been reincorporated in the White bill and while Senator Jones has not said so for publication it is understood on very good authority that he will be willing to accept the White bill if it passes the house in anywhere near the form in which it has been reported out of committee. In addition to this, it is said that Senator Fletcher, of Florida, a Democrat who has always been much interested in the merchant marine, is also willing to accept the White bill as it has been drafted. Further than this it is reported that President Coolidge, up to the time of this writing, has seen no serious objections to the White bill, at any rate not anything vital enough to call Mr. White's attention to in connection with its passage through the house.

The fact that both Senator Jones, author of the merchant marine bill in the upper house and Senator Fletcher are willing to accept the White bill means a great deal, inasmuch as they

(Continued on Page 50)



Recently Completed Steam Tanker Robert W. Stewart at Whiting, Ind. April 14, 1928

Robert W. Stewart—New Tanker Gives Good Results on Trial Runs

By A. H. Jansson

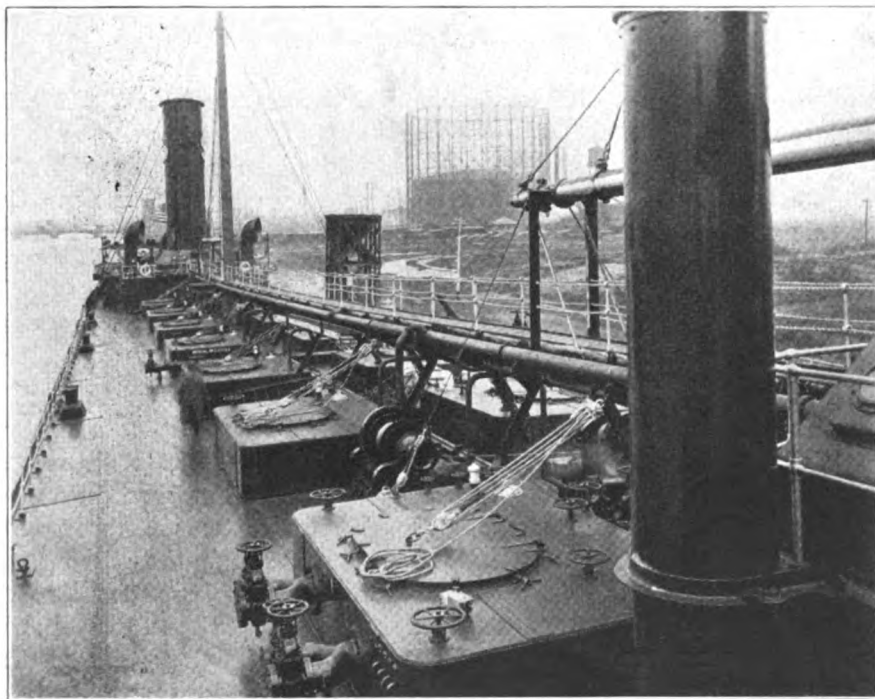
ON APRIL 7 the American Ship Building Co. delivered to the Standard Oil Company of Indiana an exceptionally well built tanker named the ROBERT W. STEWART. She is the first self-propelled tank

vessel of any size built on the Great Lakes since the WILLIAM P. COWAN, for the same owners, delivered in 1918. With the entry of the STEWART in service (she sailed with her first cargo, 39,000 barrels of oil, out of

Whiting, Ind., on April 17) the Standard Oil Co. of Indiana has increased the carrying capacity of its fleet by over 2,000,000 gallons. The fleet now consists of the tank steamers, WILLIAM P. COWAN, RENOWN and ROBERT W. STEWART and the tank BARGE C and the tug OUTAGAMIE. The individual capacity of each unit is as follows, in United States gallons: WILLIAM P. COWAN, 2,700,000; ROBERT W. STEWART, 2,071,780; RENOWN, 1,750,000 and BARGE C, 700,000 making a total trip capacity for the entire fleet of 7,221,780 gallons.

A good record was made in the delivery of this vessel in seven months from the time of laying the keel. The keel was laid Aug. 29, 1927, the launching took place Dec. 3, and delivery was made April 7. Considering the elaborateness and character of the vessel and the rigid hull and engine inspection which prevailed throughout, the work was accomplished in good time.

This vessel, a credit to all who had anything to do with building her, was designed by N. J. Pluymert, naval architect, New York, in consultation with Beaumont Parks, vice president of the Standard Oil Co. of Indiana and J. E. Evans, manager of the marine department of the company. A. W.



Looking Aft on Deck, Tanker Robert W. Stewart

Cross, naval architect, and J. C. Workman, chief engineer of the American Ship Building Co. were responsible for the design in detail.

There is nothing revolutionary in design about the new tanker, but she is one of the finest examples ever turned out in this country in any shipyard either on the Atlantic or the Great Lakes in the care taken in construction of both hull and machinery. With the exception of equipment, pumps and a number of other auxiliaries, this vessel, in hull, main machinery, boilers, windlass, steering gear and warping winches, is completely the product of the shipbuilding company. The simple and conservative design of machinery combined with the highest quality of workmanship and materials minimizes any possibility of breakdown or operating difficulties. It is therefore anticipated that along with a very fair fuel economy she will give regular and uninterrupted service over a long period of time with little expense for up-keep.

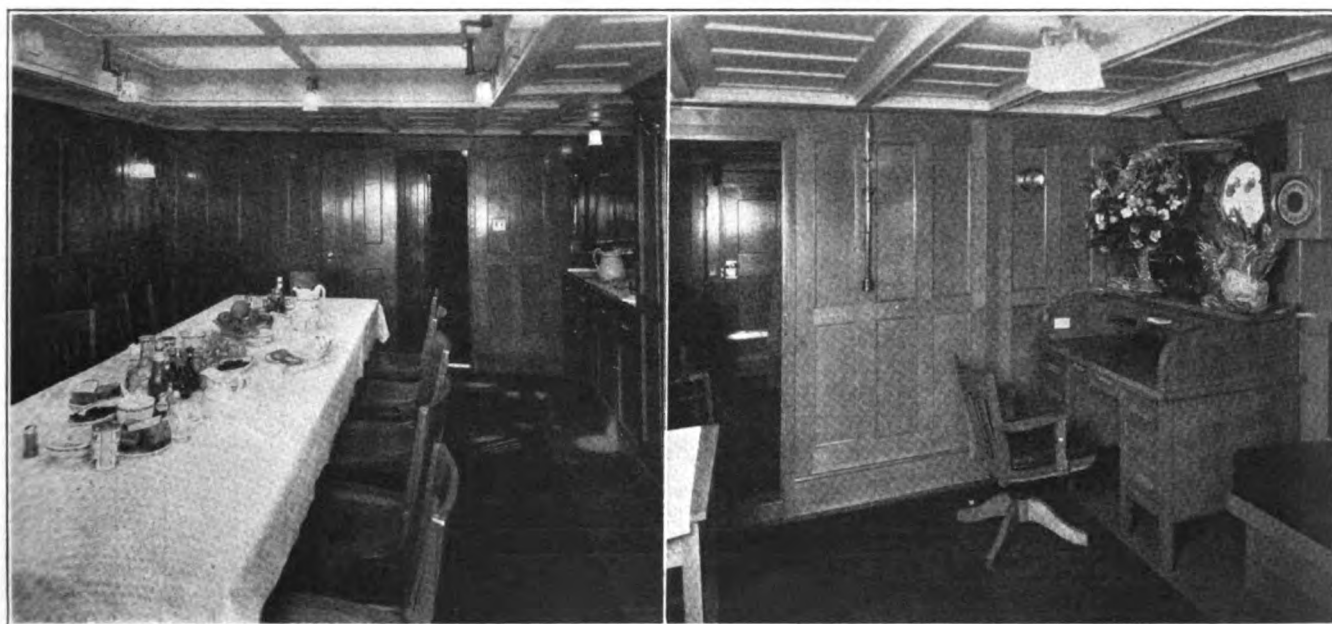
Trial Trip Results are Good

After the Robert W. Stewart was completed at the Lorain, O., plant of the American Ship Building Co., and before acceptance by the owner it was decided to conduct a careful trial trip in order to determine what her boiler efficiency might be and what the fuel consumption will be in pounds of oil per horsepower per hour. It is seldom that the time is found to carry out such tests on vessels built on the Great Lakes. Such trials, on a vessel like this of a conservative engineering design, are of particular interest in bringing out results which might be expected for many vessels

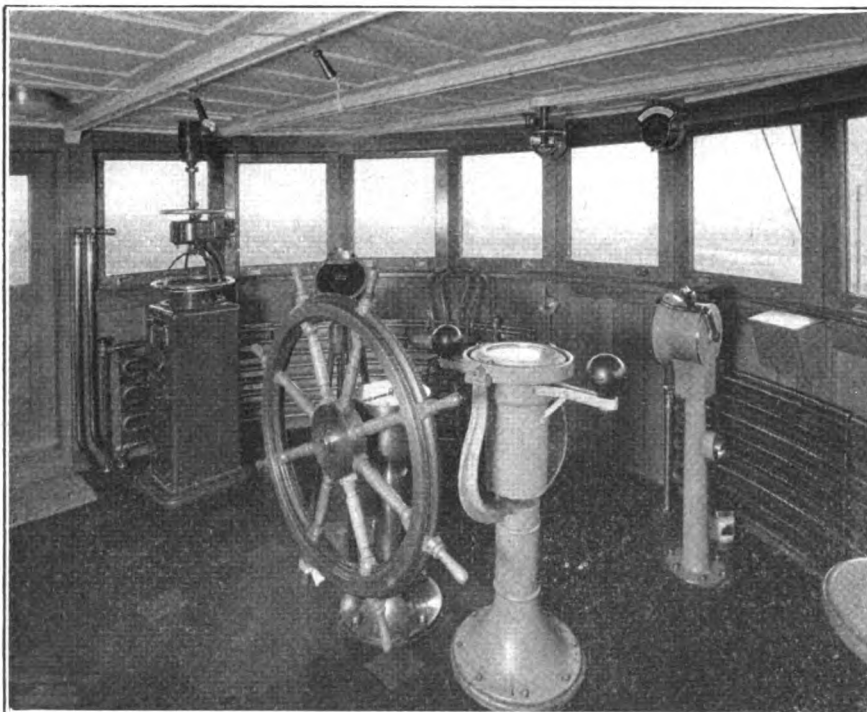
TABLE I STR ROBERT W STEWART STR N° 802 STANDARD OIL CO OF INDIANA - OWNERS BUILT AT LORAIN, OHIO		
LENGTH O A 390'5"	CARGO 2,071,780 U.S. GALLONS	DISPLACEMENT 3,885 LONG T.S.
LENGTH B P 380'3"	FUEL OIL 114,825 U.S. GALLONS	
BEAM 52'0"		
DEPTH MOULDED 25'0"		
DRAFT DESGD 19'0"		
KEEL LND - 8-29-27		
LAUNCHED - 12-3-27		
DELIVERED - 4-7-28		
OIL TANKER		
BLOCK COEF. .82		
ENGINE & BOILERS		OTHER AUXILIARIES
MAIN ENGINE - ONE VERTICAL, TRIPLE EXP ENGINE, 25½, 38½ 63 x 42 STROKE, 180 LBS. STEAM PRESS., SURFACE CONDENSING TYPE 4½ x 5 DOUBLE TURNING ENG, 12x20 REVERSE ENG PROPELLER - SECTIONAL, 4 BLADED, C IRON 14'10" DIAM. - 14'4" PITCH. CONDENSING APPARATUS - "WHEELER" CYLINDRICAL, SURFACE CONDENSER, 2700 SQ FT. COOLING SURFACE. 2 STEAM JET AIR PUMPS AND A 12" CENTRIFUGAL CIRCULATING PUMP DRIVEN BY 9x9" ENGINE. CONDENSATE PUMP 7x7x10, WITH AUTOMATIC THROTTLE REGULATION FEED & FILTER TANK ABOUT 500 GALLON CAPACITY, FITTED WITH FLOAT FOR REGULATING THROTTLE AUTOMATICALLY AT FEED PUMPS. BOILERS - 2 SINGLE ENDED SCOTCH BOILERS 15'4½" DIAM x 11'6" BETWEEN HEADS, 180" PRESS EACH WITH 3-46" DIAM MORRISON FURNACES "HOWDEN" FURNACE FRONTS TOTAL HEATING SURFACE 4234 SQ FT. BUILT TO U.S. GOV'T & AMERICAN BUREAU RULES "TODD" OIL BURNING EQUIPMENT WITH TWO 6'4"x6" HOR. DUPLEX PUMPS. AIR HEATERS - "HOWDEN", 2760 FT HEATING SURFACE "AMERICAN BLOWER" FORCED DRAFT FAN COUPLED TO 2 STEAM ENGINES. CAPACITY OF FAN 20,000 CU. FT. PER MINUTE SMOKE STACK - 7'6" DIA INNER 10'0" DIA OUTER FEED WATER HEATER - "REILLY 2-PASS MARINE TYPE CAPACITY 42000 LBS. PER HOUR 100' TO 220" AT 6 LBS. BACK PRESS. FLUE BLOWERS - "BENNET" BLOWERS FITTED		BOILER FEED ONE 12x7x12 DUPLEX MAIN FEED, ONE 12x7x12 DUPLEX AUX FEED PUMP 2-METROPOLITAN DOUBLE TUBE 2" INJECTORS REFRIGERATION - 1 - TWO TON BRUNSWICK PLANT COUPLED TO STEAM ENG BALLAST 1-16x10x14 DUPLEX BILGE 1-6'6"x6" AFT DUPLEX " 1-6'6"x6" FORD DUPLEX COOLER 1-5½'x5'5" DUPLEX OIL 1-7'6"x10" DUPLEX (TRANSFER) OIL 2-15'11"x18" DUPLEX (CARGO) DRAINAGE 1-7'6"x10" DUPLEX LIGHTING 2-15 KW ENGBERG 115 VOLT D.C. GENERATORS CONNECTED TO STEAM ENGINES VENTILATING - 1 "AMERICAN BLOWER" FAN & ENG FORD. FOR PUMP ROOM - 9000 CU FT STEERER - A.S.B. CO'S 9'x9" DUPLEX WINDLASS - A.S.B. CO'S 10'x10" SPUR GEARED DECK ENGS - 6-A.S.B. CO'S 8'x10" DUPLEX. SANITARY SYSTEM - HOT & COLD WATER SYSTEMS FITTED FORD & AFT. SUPPLIED BY 6'6"x6" DUPLEX PUMP IN ENG ROOM DRINKING WATER - "GRISCOM-RUSSELL" DISTILLING APPARATUS CONSISTING OF EVAPORATOR, DISTILLER & FILTER CAPACITY 50 GALL PER HR. CONNECTED TO 1-3'x4" DUPLEX PUMP.

on the Great Lakes generally in use if the same care is applied to save all heat and to keep all of the machinery in first class working order. Complete detail results of the trial trip will be found in the accompanying Tables I to VI inclusive. It is interesting to note that the average results for runs No. 6 to No. 12 in-

clusive were: revolution per minute, 95 plus; corresponding indicated horsepower, 2490; evaporation in pounds of water per pound of oil, 14.9; pounds of fuel oil burned per indicated horsepower per hour, 1.14; boiler efficiency 80.1 per cent; speed in statute miles per hour, 13.37; mean draft, 18 feet ½-inch.



Tanker Robert W. Stewart. At Left—Officers' Mess. At Right—Captain's Office and Quarters



Pilot House on the Tanker Robert W. Stewart—Radio and Gyro Compasses

Table I gives all the principal particulars of hull, engine, boilers and auxiliaries at the time of the trial April 4, 1928, leaving Lorain, O. at 9:30 a.m. In Table II the results for tests No. 2 to No. 5 inclusive trip. The trial was held on Lake Erie and for tests No. 6 to No. 12 inclusive

TANKER S. S. ROBERT W. STEWART
TABLE II
TRIAL TRIP ON LAKE ERIE, APRIL 4, 1928

FROM 2½ MILES OFF LORAIN LIGHT TO S. E. SHOALS. APPROX. 24.25 MILES.
TIME 10:20 A.M. TO 12:19 P.M. = 1HR 50 MIN.
AVERAGE R.P.M. = 96.189. MILES PER HR. = 13.22. SLIP OF PROPELLER 15.6%.
RUNS MARKED # 2, 3, 4, & 5.

FROM SOUTH EAST SHOALS TO CLEVELAND CRIB = 41.25 MILES.
TIME 12:25 P.M. TO 3:30 P.M. = 3HR 05 MIN.
AVERAGE R.P.M. = 95.3. MILES PER HR. = 13.37. SLIP OF PROPELLER 13.6%.
RUNS MARKED # 6, 7, 8, 9, 10, 11, & 12.

DRAFT FWD = 17'-10", DRAFT AFT = 18'-3", MEAN DRAFT = 18'-0½"

ENGINE - 23½" - 38" - 63" x 42" ROD 5½" DIA.

BOILERS - TWO SCOTCH MARINE TYPE, 15' - 4½" DIA x 11'-6" LG - 180" W.P.
TOTAL HEATING SURFACE 6234 SQ. FT.

PROPELLER 14'-10" DIA 14' - 4" PITCH

FOR RUN FROM S. E. SHOALS TO CLEVELAND CRIB:-

AVERAGE I.H.P. OF ENGINE = 2490. STEAM CONSUMPTION BY DISPLT.
MAIN ENGINE - 35,072 #/HR.
MAIN FEED WATER TO BOILER 42,538 #/HR. AUXILIARIES - 7,466 #/HR.
TOTAL 42,538 #/HR.

EVAPORATION - MAIN ENGINE ONLY = 14.08 #/I.H.P./HR.
FOR ALL PURPOSES = 17.08 #/I.H.P./HR.

AUXILIARIES = 17% OF TOTAL EVAPORATION

HEATING SURFACE / I.H.P. = 2.5 SQ. FT.

STEAM EVAPORATED / SQ. FT. OF HEATING SURFACE = 6.8"

FUEL OIL USED DURING RUN = 940 GALLONS; AVERAGE = 341.4 GAL / HR.

FUEL OIL USED = 18500 B.T.U. SPECIFIC GRAVITY AT 60° = 1.004

SPECIFIC GRAVITY AT 75° = .999 AVERAGE 2840 # OIL / HR.

2840 = 1.14 # OIL / I.H.P. / HR.

42538 = 14.9 # EVAP. / # OF OIL.

2840 EFFICIENCY OF BOILER = 14.9 / (17.08 - 180) = 80.1%

LOADING SCALE		
DEADWEIGHT TONS AT 2240 LBS.	DRAFT	DEADWEIGHT TONS AT 2000 LBS.
		7000
6000	20	
		6500
5500	19	
		6000
5000	18	
		5500
4500	17	
		5000
4000	16	
		4500
3500	15	
		4000
3000	14	
		3500
2500	13	
		3000
2000	12	
		2500
1500	11	
		2000
1000	10	
		1500
500	9	
		1000
	8	500
0	7-0"	0

Scale—Tanker Robert W. Stewart

are conveniently summarized. The first set of tests commenced at 10:29 a.m. and ended at 12:19 p.m., an elapsed time of 1 hour and 50 minutes, on a course from 2½ miles off Lorain light to South East shoals, a distance of approximately 24.25 statute miles. The second set of tests commenced at 12:29 p.m. and ended at 3:30 p.m., an elapsed time of 3 hours and 5 minutes, on a course from South East shoals to Cleveland crib, a distance of 41.25 statute miles. All of the test runs referred to above were of ½ hour duration except No. 12 which was 15 minutes long. The weather was fine and clear with water smooth.

Indicated Horsepower Determined

In Table III the readings for each test run is noted in detail including the pressures at boilers, high pressure, intermediate and low pressure receivers, with indicated horsepower worked out for each cylinder and the total for all three. Temperatures, air pressures and fuel oil consumption figures are also noted. Indicator cards were taken corresponding with each test run. The detail data from all these sets are put down in Table IV. In Tables V and VI will be found correctly traced indicator cards for top



Deck View Looking Forward on the Robert W. Stewart

and bottom of each cylinder and the corresponding horsepower. These sets were chosen as representing, in Table V for run No. 1 the average normal working horsepower output of this engine, and in Table VI for run No. 5

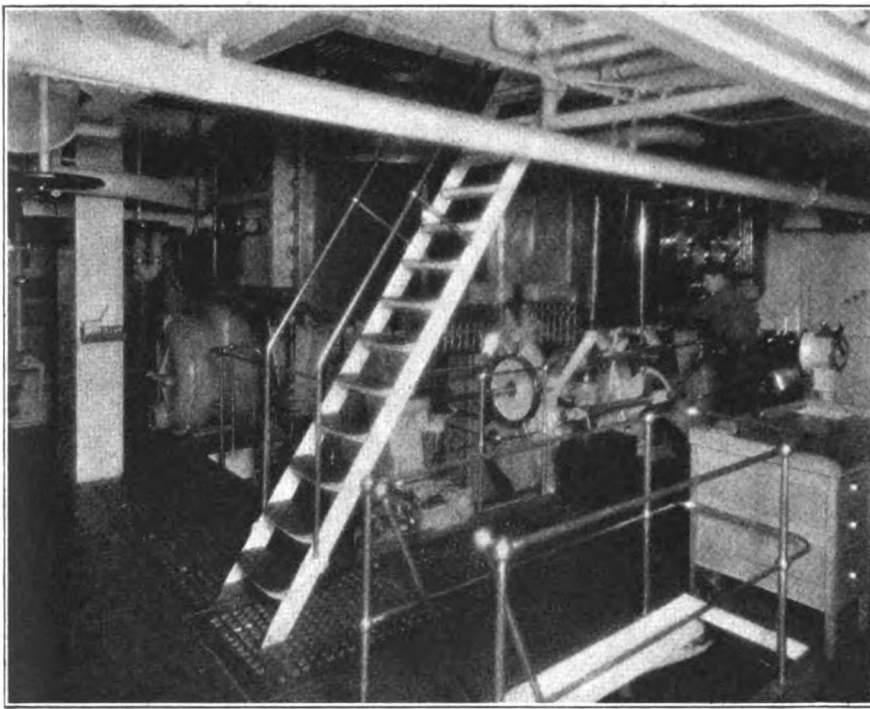
the maximum horsepower output of the engine. In run No. 1 the average revolutions per minute were 90.5 and the total indicated horsepower as computed from the indicator cards was 2168; while in run No. 5 the

TANKER S. S. ROBERT W. STEWART
DATA TAKEN ON TRIAL TRIP APRIL 4, 1928
TABLE III

TEST NO.	TIME	REVS.	BOILER PRESSURE	H.P. RECV.	I.P. RECV.	L.P. RECV.	VACUUM	CYLINDERS					TOTAL I.H.P.	TEMPERATURES										PRESS		FUEL OIL			
								H.P.		I.P.		L.P.		SEA SUCT.	OVBO DISC	F&R TANK	BOILER FEED	STACK	ENG. AT FAN	OIL SUCT.	OIL DISCH.	AIR AT FAN	AIR AT FURN.	OIL PRESS.	NO. OF TIPS	SIZE OF TIPS	METER READG. GALL.		
								U.P.	L.H.P.	U.P.	L.H.P.	U.P.	L.H.P.																
1	9.30	90.5	175	162	57	15.5	23½	705	649	70	625	58½	894	2168	38	95	85	168	275	81		75°	1½	.4	125	6	86	46930	
2	10.30	94½	165	160	65	14½	24½	777	667	74	752	61½	993	2411	38	92	84	178	360	80		75	1½	.6	125	6	86	47160	
3	11.30	97.5	175	168	65	15	23	77	617	72	848	63½	1124	2689	37	118	140	220	400	82		75	1½	.5	135	6	86	47680	
4	12.00	97.5	175	168	65	15	24½	77	725	72	813	63½	1092	2630	37	108	121	211	410	80		70	1½	.5	135	6	86	47930	
5	12.30	95.5	175	168	65	15.5	24½	77	690	72	859	63½	1211	2760	38	110	113	210	360	79		70	2	.4	130	6	86	48120	
6	12.45	94	175	165	58	14	24½	72½	846	69	692	58	1068	2606	38	104	110	224	320	78		75	2	.4	130	6	86	48260	
7	1.15	95	172	161	62	14½	24½	72½	687	69	714	58	1111	2512	38	105	114	208	350	79		75	1½	.4	115	6	86	48800	
8	1.45	96	175	162	62	14½	24½	72½	701	69	726	58	1138	2565	38	107	120	210	350	80		75	1½	.5	115	6	86	48600	
9	2.15	96	175	162	62	14½	24	72½	686	69	726	58	1096	2408	38	107	120	210	350	77		75	1½	.4	100	6	86	48750	
10	2.45	95	175	162	62	14½	24½	72½	683	69	724	58	1025	2432	38	117	120	210	355	78		75	1½	.3½	95	6	86	48920	
11	3.15	96	175	163	60	15	24	72½	690	69	715	58	1075	2480	38	106	120	210	360	78		75	1½	.4	100	6	86	49120	
12	3.30	95	175	160	60	14½	25	72½	698	69	707	58	1025	2430	38	105	120	217	350	78		75	1½	.4	100	6	86	49100	
AVERAGE	95+	175-	162	61	14½	24.3	72½	713	69	715	58	1078	2490	38	107	118	212	348	78		75	1.6	.4+	107	6			3614	
TOTAL 340 GALL.																													

AUXILIARIES & NOTES

N°	UNIT	SIZE	TYPE	STM. PER HR. @ PRESS	NOTES	FIGURES GIVEN ARE FOR AVERAGE STEAM CONSUMPTION PER HOUR, FOR TESTS N° 6, 7, 8, 9, 10, 11 & 12.
1	MAIN FD PUMP	12 x 7½ x 12	DUPLEX	866 LBS @ 175	11" STROKE	AVERAGE ROOM TEMPERATURE AT FAN INTAKE 73°
1	15 KW. GEN. TOR	7 x 7 ENG.	SIMPLEX	1732 "	@ 115	AVERAGE BACK PRESS - 5 LBS
1	SANITARY PUMP	6 x 4 x 6	DUPLEX	34 "	@ 115	
1	CONDENSATE "	7 x 7 x 10	"	186 "	@ 115	
1	TAIL PUMP	9 x 9 ENG.	SIMPLEX	1633 "	@ 115	
1	FAN ENG.	7 x 7 ENG.	SIMPLEX	1451 "	@ 115	
1	BILGE PUMP	6 x 6 x 6	DUPLEX	288 "	@ 115	
1	REFRIG. ENG.		SIMPLEX	150 "	@ 115	
1	STEER. ENG.	9 x 9	DUPLEX	350 "	@ 80	
1	FUEL OIL PUMP	6 x 4 x 6	DUPLEX	200 "	@ 115	
1	TET AIR PUMP			350 "	@ 170	
	RADIATION ETC.			206 "		
TOTAL				7466	-	



Main Engine from Operating Platform—The Robert W. Stewart—Starboard Side

average revolutions per minute were 95.5 and the total indicated horsepower was 2759.5.

The sea trials of the ROBERT W. STEWART were conducted by the technical staff of the shipyard under the direction of J. C. Workman, chief engineer, Mr. A. W. Cross, naval architect, and Mr. Turner, assistant chief engineer. Beaumont Parks and J. E. Evans, manager of the marine department of the Standard Oil Co. of Indiana were on board representing the owner. The trials were satisfactory in every respect and three days later the vessel was accepted by the owner.

On the way from Lorain, O., to Whiting, Ind., where she arrived on April 14, the vessel behaved splendidly, and the owner anticipates a successful career for this latest addition to the fleet.

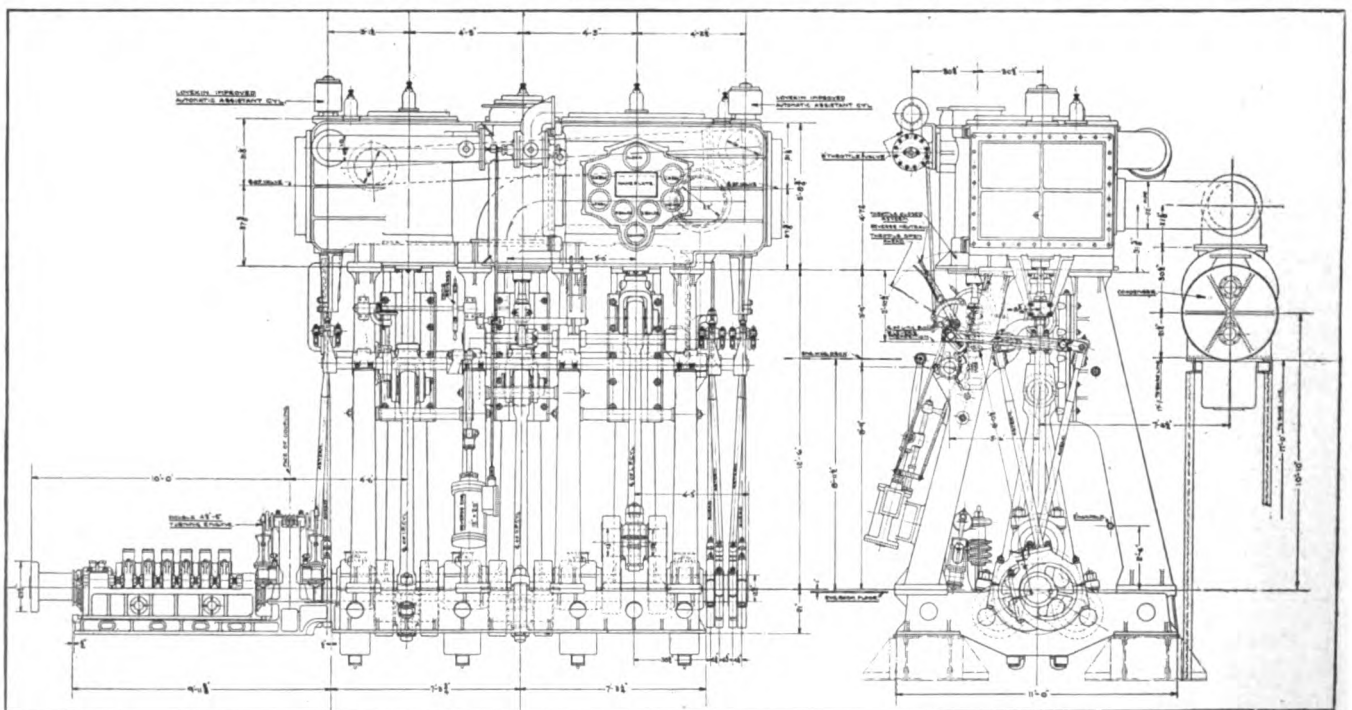
Longitudinal System of Framing

The ROBERT W. STEWART is built on the Isherwood system of longitudinal framing. The hull proper is divided into seven double main cargo tanks each 30 feet long with a combined capacity of 2,000,000 gallons. Aft of tank No. 7 are two cofferdams, with fuel bunker immediately

aft of 2297 barrels capacity. Forward of tank No. 1 is located the pump room and forward of this space is the forepeak. From the stem to the after fuel bunker bulkhead there is no double bottom, cargo and bunkers are carried down to the bottom skin of the vessel. As customary in Great Lakes vessels boilers and machinery are fitted aft while the bridge and pilot house with captain's quarters are located forward. The vessel has been built to the highest class of the American bureau of shipping for Great Lakes tankers. She has a single propeller driven by a triple expansion steam engine. The thrust is of the horseshoe type, American Ship Building special design. Steam is supplied by two Scotch marine boilers. Oil is used as fuel using Todd oil burning equipment. Over each cargo tank and the bunker tank are fitted expansion trunks with manholes in top with hinged gasketed and dogged covers.

Excellent accommodations are provided for crew and officers. Quarters for deck officers and men are provided in the texas on the fore-castle deck and in the fore-castle. Engineer officers and engine room crew are quartered in the after deck house. The captain's office and living quarters consisting of a bedroom and bath and a spare room are located in the steel house on the fore-castle deck. An accompanying illustration shows the pilot house of steel construction located directly above this house.

The pilot house, captain's room, office, spare room and bath are all finished in quartered white oak panel-



General Arrangement of Triple Expansion Steam Engine on the Tanker Robert W. Stewart

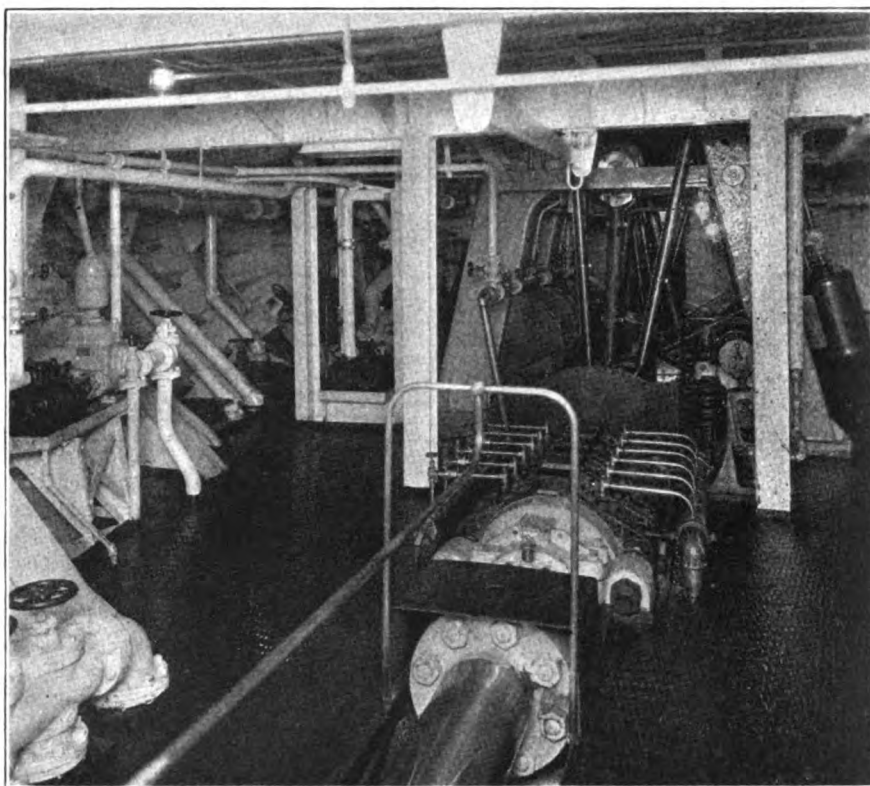
ing. All rooms aft including galley, pantry and messroom are finished in cyprus paneling with three-inch air space between deck. The chief engineer's room and officers' messroom are finished in quartered white oak paneling. The remainder of the living rooms and quarters are finished in tongue and groove yellow pine staving. Overhead all rooms are paneled in cyprus. The lining in quarters adjoining engine and boiler casings is separated from the steel bulkhead by a two-inch air space and two-inch block cork insulation. All inside doors are of paneled oak.

Care in Hull Construction

To give a durable finish all hardwood exposed to weather has been given three coats of spar varnish. Quarters finished in oak have been given three coats of hard oil rubbed to a dull finish. Where yellow pine is used two coats of varnish have been applied.

There are two steel pole masts. On each mast is fitted a 40-foot boom provided with the customary running rigging for handling suction hose, stores and odd cargo. Extending fore and aft along the center line of the vessel from the forecabin to the after deck house is a gangway with stanchions and lifelines. One of the accompanying illustrations gives a clear view of the deck expansion trunks and gangway. Steam and exhaust lines, whistle pulls and electric conduits are brought forward along this bridge.

The dimensions of the ROBERT W. STEWART are, length overall, 390 feet 5 inches; length between perpendiculars, 380 feet 3 inches; beam molded, 52 feet 0 inches; depth



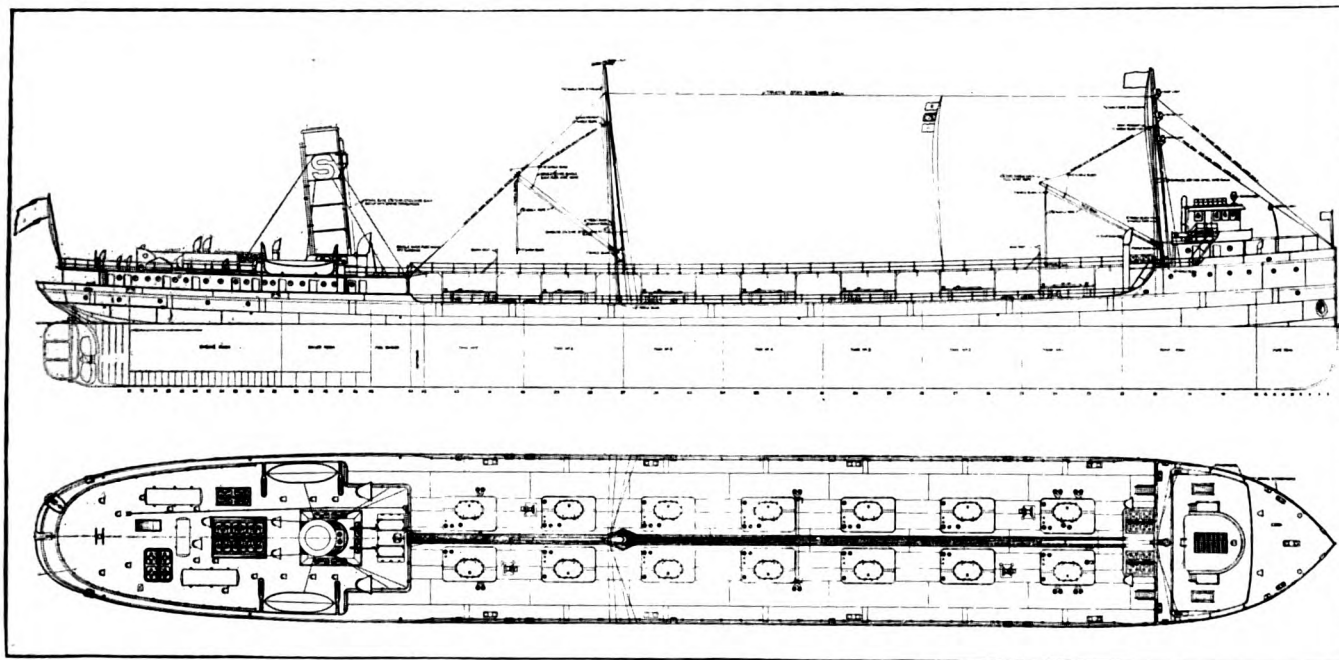
Engine Room of Robert W. Stewart Looking Forward—Thrust and Main Engine

molded, 25 feet 0 inches; load draft, 19 feet 0 inches.

The greatest care was taken to make the workmanship throughout as nearly perfect as possible. All work was first fitted metal to metal and holes were made to come true and fair. All rivets were driven hard up and to completely fill the holes. Such careful work insures oil tightness not only at the time of testing the tanks but for an indefinite period in actual service. Even a minimum of carelessness in workmanship cannot be tolerated in the building of

tankers. One of the details in the hull construction which is noticeable particularly on deck is that there are no sharp corners. All plating and angles have been rounded. This makes for neatness and safety.

For each tank, fitted to the top of the expansion trunk, there is a special vapor pressure valve of the owner's design. Particular care has been taken to avoid the possibility of sparks and where two moving parts come together brass bushings are used or other nonferrous metal separation is applied. Every pipe where



Outboard Profile and Deck Plan of the Tanker Robert W. Stewart

TANKER S.S. ROBERT W. STEWART INDICATOR CARD DATA TRIAL TRIP APRIL 4, 1928 TABLE IX										
CARD NO.	HORSE POWERS				Σ B. W.	M.R.P. REF TO L.P. CYL.	% OF WORK			
	H.P. CYL.	I.P. CYL.	L.P. CYL.	TOTAL			H.P. CYL.	I.P. CYL.	L.P. CYL.	
1	648.560	625.200	894.320	2168.080	90.5	34.4	29.9	28.9	41.2	
2	667.070	751.950	993.460	2411.480	94.25	38.6	27.7	31.2	41.1	
3	617.273	847.352	1124.080	2587.905	97.5	44.6	23.9	32.8	43.3	
4	723.015	812.721	1091.960	2627.696	97.5	40.8	26.6	30.9	42.5	
5	689.790	858.597	1211.120	2759.517	97.5	43.7	25.0	31.2	43.8	
6	845.510	602.402	1068.250	2516.162	94	42.0	32.4	26.6	41.0	
7	687.267	718.876	1110.900	2517.043	95	40.0	27.8	28.5	43.7	
8	700.952	725.911	1133.410	2560.273	96	40.5	27.4	28.3	44.3	
9	685.901	725.911	1095.720	2507.532	96	38.1	27.4	29.0	43.6	
10	683.011	724.007	1024.350	2431.368	95	39.7	28.1	29.8	42.1	
11	690.000	714.810	1074.670	2479.480	96	39.2	27.8	28.9	43.5	
12	697.906	707.059	1024.870	2430.835	95	38.6	28.7	29.1	42.2	

it passes through hangers including all cargo lines are lead lined to avoid possibility of friction.

Simple Fire Fighting Equipment

A simple, straightforward, steam fire extinguishing system of large capacity has been installed. This system especially developed by the owner received the approval of the steamboat inspection service. There is also a system of water mains of exceptionally large size served by powerful pumps.

The steering gear is of American Ship Building Co.'s direct geared duplex type and it is operated by hand and steam aft and by steam

forward by means of steel shafting in roller bearings and beveled gear transmission to the pilot house. The windlass is of the spur geared type also built by the shipyard. Anchor chain of 2 $\frac{1}{8}$ -inch diameter Naco is used. The navigating equipment is quite complete and up-to-date. There is a Kolster radio compass for determining the bearing of the ship in fog or heavy weather. Electric engine room signals of latest Cory manufacture are installed as well as a telephone to the engine room and a separate telephone to the after deck house. In line with modern practice a Sperry gyro compass has been fitted with two repeaters. There

is also a Sperry course recorder and a McNab revolutioner indicator. There is a Ritchie magnetic compass in, a Morrison binnacle.

The propelling machinery consists of one vertical, triple expansion steam engine with cylinders 23 $\frac{1}{2}$ x 38 x 63 inches in diameter and with a stroke of 42 inches. This engine was designed and built by the American Ship Building Co. To the high pressure cylinder the steam is admitted by a piston valve. This cylinder has a hard cast iron liner. Double ported slide valves with relief frames admit steam to both intermediate and low pressure cylinders. The cylinder valves are connected to Lovekin assistant cylinders. The Stephenson double bar link of the over-hung style is used for operating all valve gears.

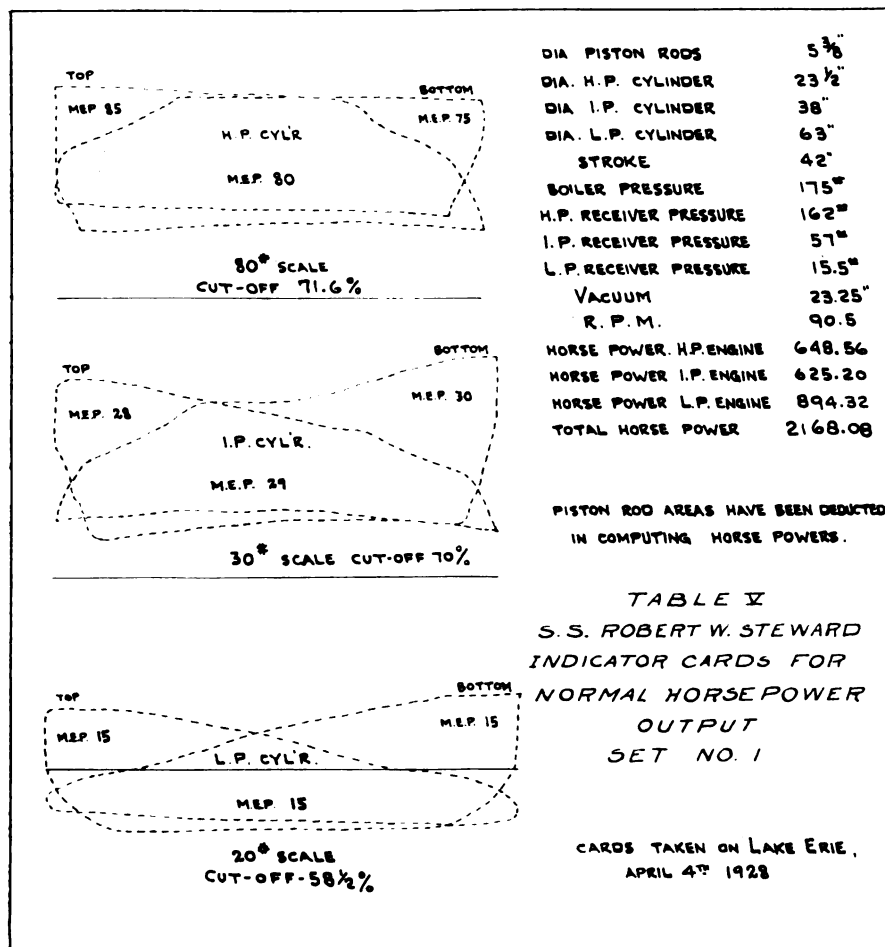
Triple Expansion Steam Engine

The engine columns are arranged three in the back with water cooled slipper guides and four in front, all of cast iron. The bed plate is of box girder section with four bearings fitted with Parsons white bronze for a 12 $\frac{1}{2}$ -inch diameter crankshaft. A built-up type of crankshaft is used of forged steel and cast steel crankwebs with the shaft increased in diameter in the webs.

Main engine pistons are of box type and have all been fitted with C. Lee Cook's packing rings made of graphitic iron. The operating gear is located as shown in one of the accompanying illustrations on the starboard side of the engine at the main deck level.

In order to increase economy and to minimize scale deposits in the boilers due to raw water, the exhaust from the low pressure cylinder of the main engine is carried to a surface condenser made by the Foster-Wheeler Corp. Vacuum is maintained by two steam jet air pumps and a condensate pump. For circulating cool water in the condenser there is a 12-inch centrifugal pump supplied by the Morris Machine Works. As a standby for circulating water for the condenser, one of the reciprocating pumps can also be used if found necessary at any time. All feed water is taken from the feed and filter tank in which is utilized the heat from all exhausts and drains.

To further save heat all the cylinders and main and auxiliary steam piping are thoroughly insulated. Over this insulation planished steel has been fitted held in place by polished brass bands making a very neat and effective job. The hot water tanks and the feed water and feed and filter tank are also insulated and lagged. In addition there is not a single pipe car-



rying steam on board the ship that is not magnesia covered and canvas lagged. Every piston rod and valve stem of the main engine and all auxiliaries have Martell metallic packing. During the trial trip not a single steam leak developed. There is no question but that such careful conservation of heat will reduce fuel consumption and thus the cost of operation. Paying attention to such important details means ultimate operating efficiency.

The single propeller is of sectional type cast iron and has four blades. The diameter is 14 feet 10 inches and the pitch is 14 feet 4 inches.

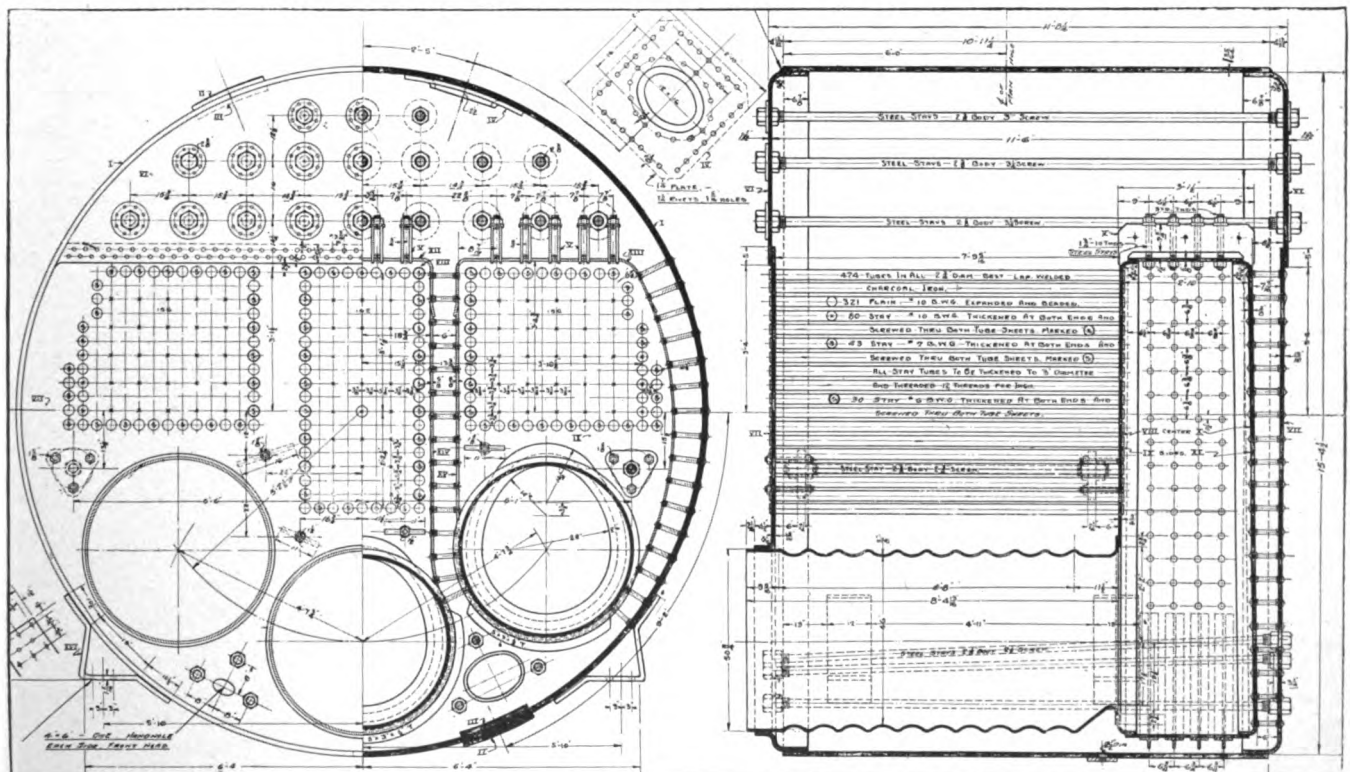
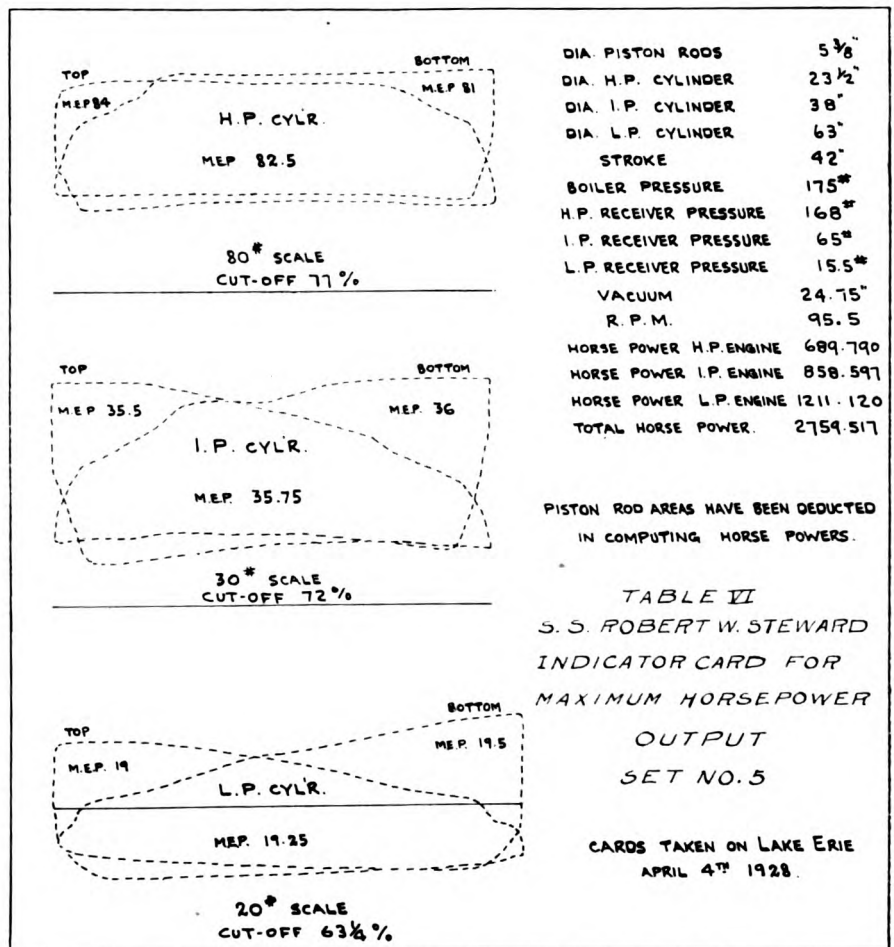
As stated above steam is furnished by two marine Scotch boilers. Each boiler is 15 feet 4½ inches in diameter and 11 feet 6 inches long inside of heads. There are three 46-inch inside diameter Morrison suspension furnaces in each boiler. In specifications the boilers comply to Lloyd's and the United States steamboat inspection rules for 180 pounds per square inch working steam pressure. Boiler tubes are of charcoal iron and are 2¾ inches in diameter. These boilers were designed and built by the American Ship Building Co. at the Lorain, O., plant. They represent in every detail the best modern practice for their type. Oil fuel is used.

Pumping System and Auxiliaries

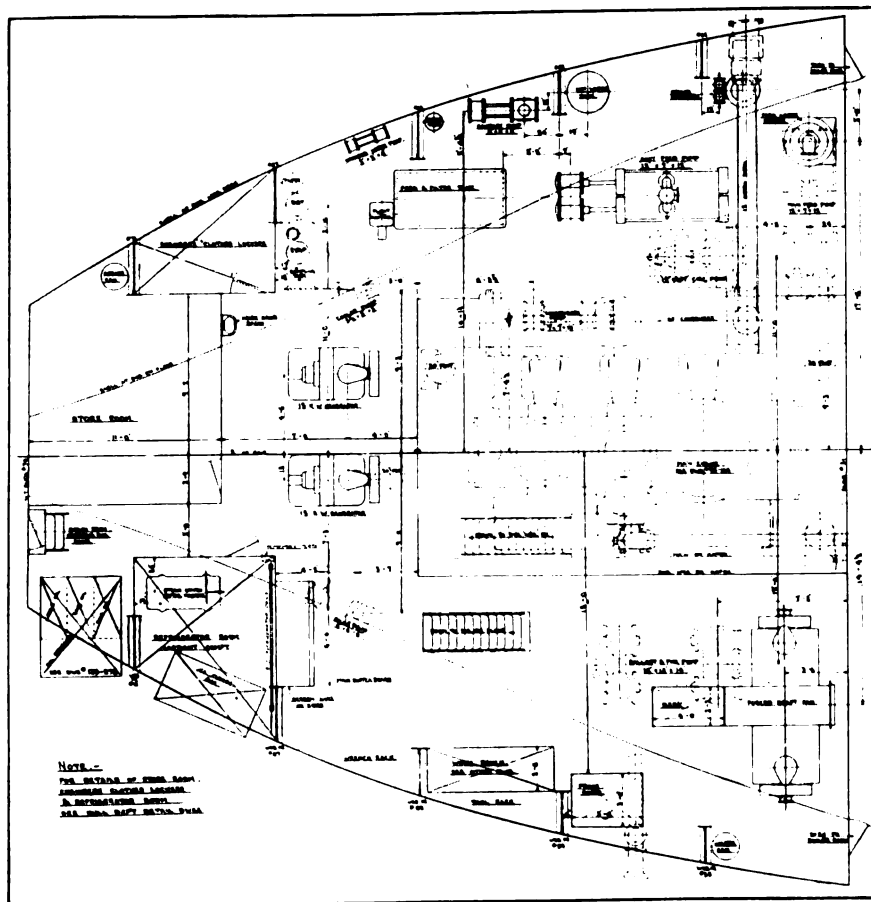
The pumping system of this vessel though powerful and efficient is comparatively simple. There are two

steam driven duplex cargo pumps 15 x 11 x 18 inches located in the forward pump room. These two pumps were furnished by the National Transit Co. There is also one

7 x 6 x 10 inches duplex transfer pump located in the forward pump room and a 6 x 4 x 6 inches duplex bilge pump in the same location. For ventilating the forward pump



Layout of Scotch Type Boiler—Two of These Fitted in the Robert W. Stewart



Arrangement of Auxiliaries in Engine Room of the Robert W. Stewart

room there is one American Blower fan driven by a reciprocating steam engine with a capacity of about 9000 cubic feet.

In the engine room there is a ballast pump 16 x 10 x 14 inches of duplex type. This pump may also be used for fire purposes. The boiler feed system is served by one main feed pump 12 x 7 x 12 inches duplex

type and by an auxiliary pump of 12 x 7 x 12 inches duplex type. In addition there are also two Metropolitan double tube two-inch injectors.

Usual lake practice has been followed in the layout of the sanitary system. The necessary sanitary water supply is furnished by a 6 x 6 x 6 inches horizontal duplex pump fitted with a governor set at 45 pounds.

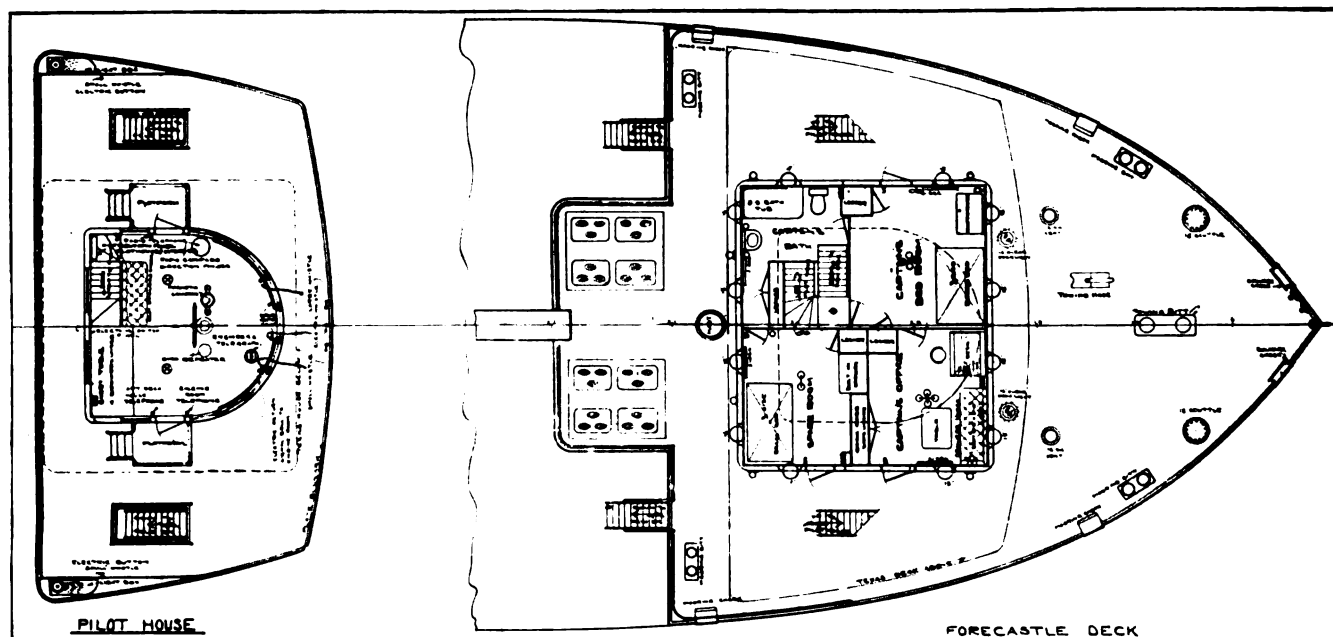
There are two hot water tanks for furnishing hot water to officers and men, one forward and one aft. All pumps except as noted are of Dean make.

It is of utmost importance that the drinking water should be pure and the ROBERT W. STEWART is equipped with a Griscom-Russel distilling apparatus consisting of an evaporator, distiller and filter with a capacity of 50 gallons per hour. After being distilled the water is drained through the distiller into a tank from which the drinking water pump of duplex type, 3 x 2 x 4 inches in size delivers it to a tank on the upper deck. From the latter tank drinking water is then supplied by gravity to the faucets and drinking fountains in various places.

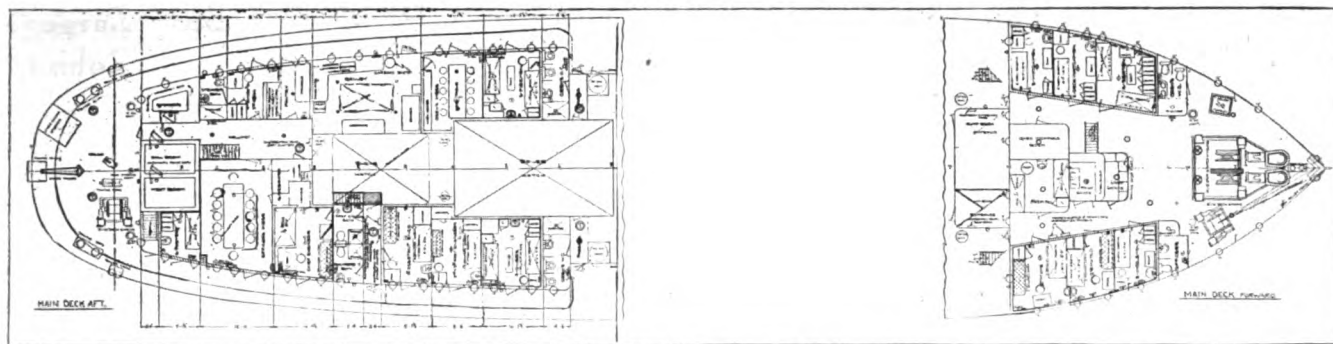
The practice of attaching auxiliary pumps to the main engine undoubtedly reduces the steam consumption for the services that these pumps take care of. In the past it has been the custom to attach an air pump and a bilge pump. In this vessel there are no pumps attached to the main engine and this is undoubtedly better engineering practice. With this arrangement there is complete freedom and flexibility. The auxiliary services do not depend on the main engine and the main engine does not need to depend upon the attached pumps. The air pumps are of the steam jet type and there is also a separate 6 x 6 x 6-inch bilge pump in the lower engine room.

Two Electric Generating Sets

Electricity for light and all other purposes is supplied from two 15-kilowatt, 115 volt, direct current, Engberg generators direct connected to



Arrangement of Pilot House and Captain's Quarters on the Robert W. Stewart



Layout of Quarters on Main Deck—Robert W. Stewart At Left—Aft—At Right—Forward

Engberg reciprocating steam engines. Refrigeration is supplied to an insulated meat and vegetable room by one 2-ton capacity Brunswick-Kroeschell steam driven refrigerating machine. Besides coils to the meat and vegetable room there is an ice making tank connected to the machine, so that ice can be made daily as needed for the use of the personnel.

In all, there are six deck or mooring winches made by the American Ship Building Co. One is located in the windlass room, four are on the upper deck and one is located aft in the fantail.

Lake Service of Tanker Fleet

In the MARINE REVIEW for July, 1925, E. C. Barringer, then associate editor at Chicago, in writing of the marine department operations of the Standard Oil Co. of Indiana said:

"In popular opinion, gasoline might seem to be a spectacular and hazardous cargo, and while it can never be less than gasoline, with the exercise

of proper precautions there is a minimum of danger. To this the unblemished record of the fleet attests. The tanks are equipped with vent valves to relieve the pressure of the gases. No open lights are permitted aboard ship. Smoking is rigidly restricted to the crew's quarters. A five-foot cofferdam just forward of the fuel oil tanks on the COWAN, for example, serves as a barrier between the cargo and the fireroom. As an evidence of safety as well as all around agreeable working conditions, there was a turnover of only six men in the entire fleet in 1924.

"Whiting, Ind., or more accurately the Standard Oil dock on the Indiana harbor ship canal two miles to the east, is the nub and kernel of this trade. Gasoline and kerosene are pumped to the dock through separate 12-inch lines and are forced aboard ship through three 6-inch specially armored and protected hoses. Cargoes are taken for River Rouge (Detroit), Superior, Green Bay, Muske-

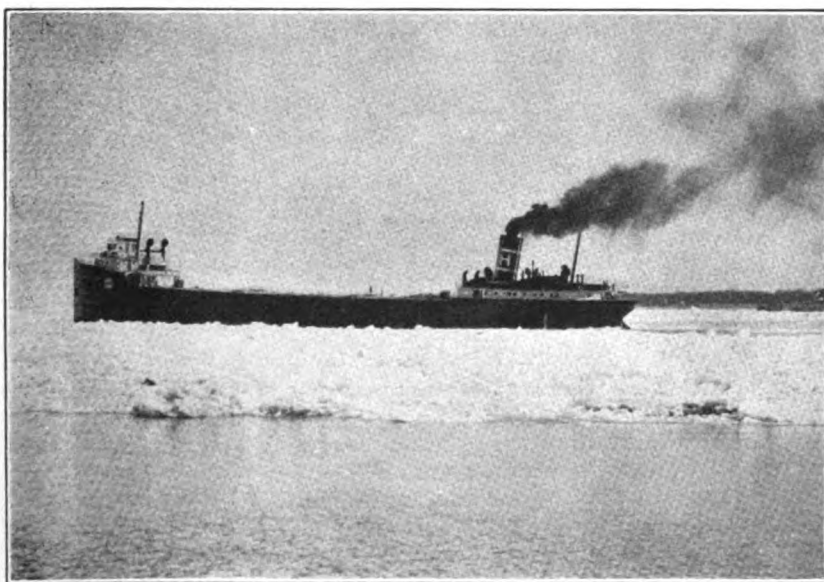
gon and Bay City. At these points are located the Standard Oil tank farms from which the gasoline or kerosene is distributed. It is entirely a one-way trade, the fleet returning in ballast. There are no mixed cargoes, although this would be physically possible."

Need Naval Architects

The United States civil service commission announces competitive examinations for associate naval architect at \$3000 per year and assistant naval architect at \$2400 per year. Applications must be on file with the civil service commission at Washington, not later than May 15. The examinations are to fill vacancies in the United States coast guard, treasury department, and in positions requiring similar qualifications.

A probationary period of six months is required; advancement after that depends upon individual efficiency, increased usefulness, and vacancies.

Early Spring Ice Conditions on Lake Huron



AT THE beginning and at the end of the season of navigation on the Great Lakes, severe weather conditions are frequently encountered. In spite of this there has always been a tendency for some operator to begin as early as there is any possible chance of getting through and to continue in the same manner at the end of the season beyond the time generally considered safe. The accompanying illustration shows the steamer, JOHN W. BOARDMAN held in ice floes on Lake Huron near Port Huron at the south entrance of the lake, April 18, 1926. She was held solidly in the ice pack for forty-eight hours. This is the condition which is likely to be met in making too early a start before the ice has cleared.

Shipping Board To Sell West African Line

Form of advertisement and specifications for sale of the American West African line, which operates a cargo service between New York and gulf ports and the west coast of Africa was approved by the shipping board on March 28. Bids are to be received until noon on May 29, when they will be opened.

This line, which carries cargo to and from more than twenty ports in Africa, is operated for shipping board account by A. H. Bull & Co., New York. It comprises eleven vessels aggregating 90,910 deadweight tons, of which not less than ten are to be sold.

Under the proposed sale the purchaser will guarantee the maintenance of a minimum of 16 round voyages, which approximate 14,000 miles each, per year for a period of five years. Twelve voyages are to be from the North Atlantic and four from the Gulf. Payment is to be made on the basis of 25 per cent down and the balance over a period of 7½ years. Ten per cent of the down payment must accompany bids.

The first sailing of the West African line was February, 1919, prior to which time there was no direct steamship service between the United States and the West African coast. Up until then most of what American freight went to this territory was shipped via an English port. With the inauguration of this direct service, however, trade between the United States and West Africa has been greatly stimulated. In the year 1926 North Atlantic ports shipped to West Africa 254,700 tons and in return received 201,500 tons of cargo, while the gulf ports shipped 57,000 tons and received 17,000 tons. In fact, the volume of our trade with these African ports is 400 per cent more today than it was in 1914.

The ships of the West African line were recently equipped with accommodations for a limited number of passengers. The cabins are all outside rooms with rates ranging from \$100 to the Azores, \$165 to the Canaries and Cape Verde islands and between \$235 to \$325 to the African ports.

The principal cargoes shipped by this line on outward voyages consist of coal, tobacco, petroleum, lumber and flour. The principal homeward cargoes are palm oil, cocoa, mahogany, copal, manganese and ivory.

Merrit, Chapman & Scott Corp. were engaged to salvage the cargo of the Eastern Steamship lines' ves-

sel, the ROBERT E. LEE, which went aground at Manonet point, Mass., on March 9. The work of salvaging the cargo was done under difficulties as the vessel was partly full of water. The report at the time this was written stated that it might be several months before it can be definitely determined whether the vessel itself can be saved. A later report indicated that it might be possible to haul the ship into deep water by May 1.

Six Bid on Panama Ships

Six shipyards submitted bids for the building of two passenger and freight steamers for the Panama Railroad Steamship line. Cox and Stevens, New York, naval architects, prepared the plans and specifications. The bids ranged from \$3,370,000 to \$3,817,000 for each vessel.

These vessels are to be 510 feet long, 63 feet broad and 32 feet molded depth from the main deck. The motive power is to be furnished by geared turbines developing 10,000 shaft horsepower to give a speed of 16 knots. Steam will be furnished by 6 water tube boilers at 300 pounds pressure per square inch. Auxiliaries are to be electrically driven.

A summary of all the bids follows: Federal Shipbuilding & Dry Dock Co., one vessel, \$3,495,000, completion in seventeen months; two vessels, \$3,370,000 each, completion of second vessel in nineteen months.

Sun Shipbuilding & Dry Dock Co., one vessel, \$3,580,406 in twenty-one months; two vessels, \$3,493,946 each, completion of second vessel in twenty-four months.

American Brown Boveri Electric Corp., one vessel, \$3,745,000, in twenty months; two vessels \$3,580,000 each, completion of second in twenty-three months.

Bethlehem Shipbuilding Corp., eastern plant, one vessel \$3,654,000 in seventeen months; two vessels \$3,589,500 each, completion of second in nineteen and one-half months; two vessels \$3,746,000 each, completion in thirty months.

Complete Ferry Cadillac

The new Detroit Windsor Ferry Co. passenger and automobile ferry CADILLAC made her first trip on the run from Detroit to Windsor on April 20. She will continue to operate in this service on a six minute schedule. Built by the Great Lakes Engineering Works the CADILLAC has a capacity of 2500 passengers and 75 automobiles.

Build Large Drydock at Robins Plant

Work has been started at the Robins plant of the Todd Shipyards Corp., at Erie basin, Brooklyn, N. Y., on a large drydock to be constructed at a cost of about \$2,000,000. It will provide facilities for 15 of the largest ships now entering New York and obliged to go elsewhere for drydocking. Of seven ships which will still be too large for the new drydock the LEVIATHAN is the only American and she alone would use American facilities. Rear Admiral Frederick C. Harris, United States navy, retired, is in charge of the design and construction of the new drydock. The approximate amounts of material to be used in the construction of the drydock are 50,000 cubic yards of concrete; 2500 tons of steel sheet piling; 3500 tons of structural and reinforcing steel; four thousand 40-foot wood piles and 750,000 board feet of timber.

The new dock will be the largest in the port and will replace graving dock No. 1 at the Robins plant. It is estimated that it will take a year and one-half to complete. It will be 715 feet long in the clear, 40 feet deep from ground to floor, 93 feet in width at the bottom and 113 feet in width at the top. The only vessels entering the port of New York which cannot be accommodated in this dock are the AQUITANIA, BERENGARIA, COLUMBUS, HOMERIC, ILE DE FRANCE, LEVIATHAN, MAURETANIA, MAJESTIC, OLYMPIC and PARIS. A pumping plant of two 600-horsepower motor-driven pumps will be capable of emptying the dock in about three-quarters of an hour. Two smaller pumps are to be provided for drainage purposes. Hydraulic power will be used for the sluice gates.

Great Lakes Red Book

Owing to the lateness of the season the 1928 edition of the *Great Lakes Red Book* published by MARINE REVIEW, Penton Building, Cleveland will not be ready for distribution until the first week of May.

As in previous years more than 1200 vessels operating on the Great Lakes and the St. Lawrence river west of Montreal are listed in the 1928 edition. The name of the owning and operating companies and of the captain and chief engineer of each vessel, capacity of the bulk freighters and a complete directory of ship yards and ship repair plants are given in this vest-pocket size directory.



Lloyd's New Building in London—View from Leadenhall Place and Lime Street—Designed by Sir Edwin Cooper

British Shipbuilding Is Active But Shipping Conditions Vary

By Vincent Delpont

European Manager of Marine Review

DIGNITY was added to the prestige of the name of Lloyd's by the presence of the King at the opening of the firm's new building in Leadenhall street, London, on March 24. In view of the close association that has existed since the end of the seventeenth century between British shipping interests and the firm that grew up from Edward Lloyd's coffee house, the magnificent new building that has been erected at a cost of about £2,000,000 can well be regarded as a monument to British commercial enterprise and to the British mercantile fleet. Built at a time when the shipping and shipbuilding industries are experiencing a period of great difficulty, it stands to prove that those who are closely associated with these interests are confident that the tide is turning and that prosperous times soon may be within reach.

The feeling of optimism which made its appearance at the beginning of the year was justified in part by the tonnage that has since been launched. On the Clyde the Scottish shipyards exceeded previous records for their January and February

launchings, which aggregated 117,672 tons, as compared with the previous high mark of 93,400 tons for that period in 1921. The tonnage launched during the first three months of this year was 41 vessels of 167,902 tons, which is a record for the first quarter of any year on the Clydeside. Last year the total for the two months was 13,350 tons. On the other hand, reports from most shipbuilding districts are to the effect that new contracts are slow in coming in, and now that most orders that were held up by the coal stoppage in 1926 have been cleared off, a decrease in future launchings is expected. One cause of anxiety is the recent increase in steel prices and coming wage increases in the shipyards, which will unfavorably affect production costs and reduce Britain's capacity to compete against foreign countries.

British Admiralty Places Orders

There are, however, fair prospects for the remainder of the year. The Admiralty has placed orders for 14 destroyers and submarines with private shipyards, while the White Star line and the Cunard line are expected

to place orders for large transatlantic liners. One 25,000-ton vessel already has been decided upon by the White Star interests. It is generally recognized that the shipyards are now well equipped to undertake large and important contracts, and although the shipbuilding plants are far from being fully employed, it is hoped that the improved relations between employers and workers in the industry, and modern equipment, will result in lower costs and a larger volume of business. Conditions in the shipping industry have been changeable. As the first quarter of the year draws to a close there is a slightly better tone, and it is expected that rates will harden once grain chartering expands.

The Belfast shipyards are fairly busy and the activities of Harland & Wolff have been expanding, enabling this firm to absorb a large number of the employees thrown out of work by the closing down of the yard of Workman, Clark & Co., Ltd. This concern, which had reached its forty-eighth year of existence, and at one time employed 8000 people, was seriously hit by the crisis of the last three years, and its financial situa-

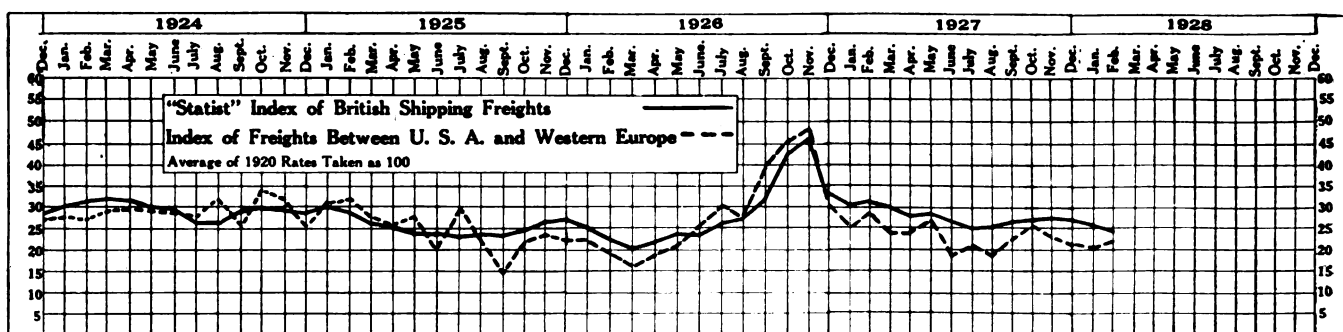


DIAGRAM SHOWING FLUCTUATION OF OCEAN FREIGHT RATES FOR FOUR YEARS AND TWO MONTHS

tion became such that it was compelled to ask for a moratorium, which was obtained. This moratorium expired on Feb. 1, and the shipyards were put up for sale as a going concern. It has been bought by William Strachan, a former director and secretary of the company, and a group acting with him. The new owners expect to resume business shortly and hope to have two vessels placed at once. The last order completed by Workman, Clark was the motor-driven oil tank vessel CHESAPEAKE, which completed her trials on Jan. 16 and was described in MARINE REVIEW for February.

Build a Number of Motorships

Harland & Wolff, Ltd., of Belfast, has been busy with a series of motor cargo vessels built for the King Line, Ltd. The KING NEPTUNE was launched on Jan. 26, and the KING ARTHUR on March 22, while the KING EGBERT, the KING JOHN, and the KING LUD completed their trials on Jan. 17, Feb. 16, and March 15. These vessels are all of the same type and, with the exception of the KING EGBERT which has a gross tonnage of 4534, their tonnage is 5180. Their length is 400 feet, breadth molded 54 feet 6 inches, depth 34 feet 8 inches. The double bottom extends the whole length of the ship and is arranged for carrying oil fuel, lubricating oil, fresh water, and water ballast. The vessels are divided into eight watertight compartments, and are provided with five cargo holds. The engine room and deck auxiliaries are electrically driven. The heating throughout is electric, and two electrically heated water tube boilers and an electric hot press are installed. The propelling machinery consists of one Harland-B. & W. six-cylinder four-cycle single-acting diesel engine. Compressed air for fuel injection is provided from a three-stage air compressor. Three 65-kilowatt electric generating sets are provided, each driven by a two-cylinder four-cycle diesel engine. Harland & Wolff also has handed over

one and launched two shallow draft oil tankers of 2360 tons to the order of Andrew Weir & Co. for the Lago Shipping Co. An order has been received from the Belfast Steamship Co., Ltd., for three express passenger steamers for the Belfast-Liverpool service.

Not Many New Contracts

The Clyde shipyards started the year well as far as the output of new tonnage is concerned, but few new contracts have been received recently, with the exception of four destroyers placed with John Brown & Co., Ltd., of Clydebank, and Scott's Shipbuilding and Engineering Co., Greenock. The Greenock Dockyard Co. has launched the single-screw Clan Line motorship CLAN MACDONALD of 9500 tons deadweight, with the first set of Harland-B. & W. double acting diesel engines made on the Clyde, which are supplied by John G. Kincaid & Co., Greenock. A larger vessel with machinery of the same type will be launched later for the same owners. Barclay, Curle & Co. are making for an Ellerman liner a 4500 brake-horsepower Doxford opposed piston type engine, while Scott's Shipbuilding and Engineering Co. are making an improved Scott-Still type engine which will develop on twin shafts a total of 5000 brake-horsepower. Alexander Stephen & Sons, Linthouse, are building a twin-screw liner of 19,000 gross tons ordered by the Peninsular and Oriental Steam Navigation Co. The contract was placed in April last year and the ship should be ready for service by the end of this year. The propelling machinery will consist of a turbo-electric installation of 17,000 shaft-horsepower capable of giving a speed of 19 knots. Steam will be generated in Yarrow watertube boilers at a pressure of 400 pounds and supplied to the turbines at a pressure of 350 pounds. William Denny & Bros., Dumbarton, is to build a vessel of 8800 tons deadweight with Denny-Sulzer diesel engines, for the Australian Steam Ship-

ping Co., London, for early delivery.

On the northeast coast the Tyne shipbuilders continue to receive a fair number of orders, and the larger concerns have a considerable number of vessels under construction. Tyne engine builders have been awarded a good portion of the machinery orders for the vessels ordered by the Admiralty. Robert Thompson & Sons, Southwick-on-Wear, have booked an order for a cargo vessel from French owners. Palmer's Shipbuilding and Iron Co. have booked an order for two passenger steamers for the Polish government, for Dantzic. Recently Armstrong-Whitworth & Co., Ltd., launched the first tanker built in Great Britain for Rumania, making the one hundred and fifty-third tanker built by the firm. An order has also been received from the Vacuum Oil Co. for a steam-driven oil tanker to carry 7250 tons deadweight. Early in February the same firm handed over the Canadian Pacific cargo liner BEAVERDALE, of 10,000 tons. This company recently acquired the Tyne Iron Shipbuilding Co.'s yard, which shortly will be re-opened. Swan, Hunter and Wigham Richardson, Ltd. has secured a contract for the construction of a special type of vessel equipped for carrying trains between New Orleans and Havana. The vessel will have a deadweight of 8000 tons and will be 420 feet long.

Ship Repairs Are Active

The ship-repairing industry has been active. This may be temporarily due to damage recently sustained by ships in bad weather. The Cardiff repair yards have had a share of this business, although they have lost several substantial orders as a consequence of their inability to compete with other districts. At Belfast the Royal Mail motorship LOCHMONAR was towed in, and a considerable amount of work was done in connection with the construction of a new fore end. Work also has been active at Liverpool and at

(Continued on Page 54)

Lloyd's Moves to New Quarters

Famous Ship Insurance and Classification Society Now Installed in Beautiful New Building—Started Before 1692 in London Coffee House

By Frank C. Bowen

THE whole world has been interested in the removal of the Corporation of Lloyd's from its historic quarters in the Royal Exchange, London, to a more convenient and far bigger premises on the site of the old offices of the Honorable East India Co., but comparatively few people stop to think that the name of this and practically every other body for the insurance and survey of ships is that of a humble coffeehouse keeper in the City of London, of whom we know surprisingly little. We do not even know the year he was born, or when he started his coffee house in Tower street, although we know that this latter was some time in the after part of the seventeenth century.

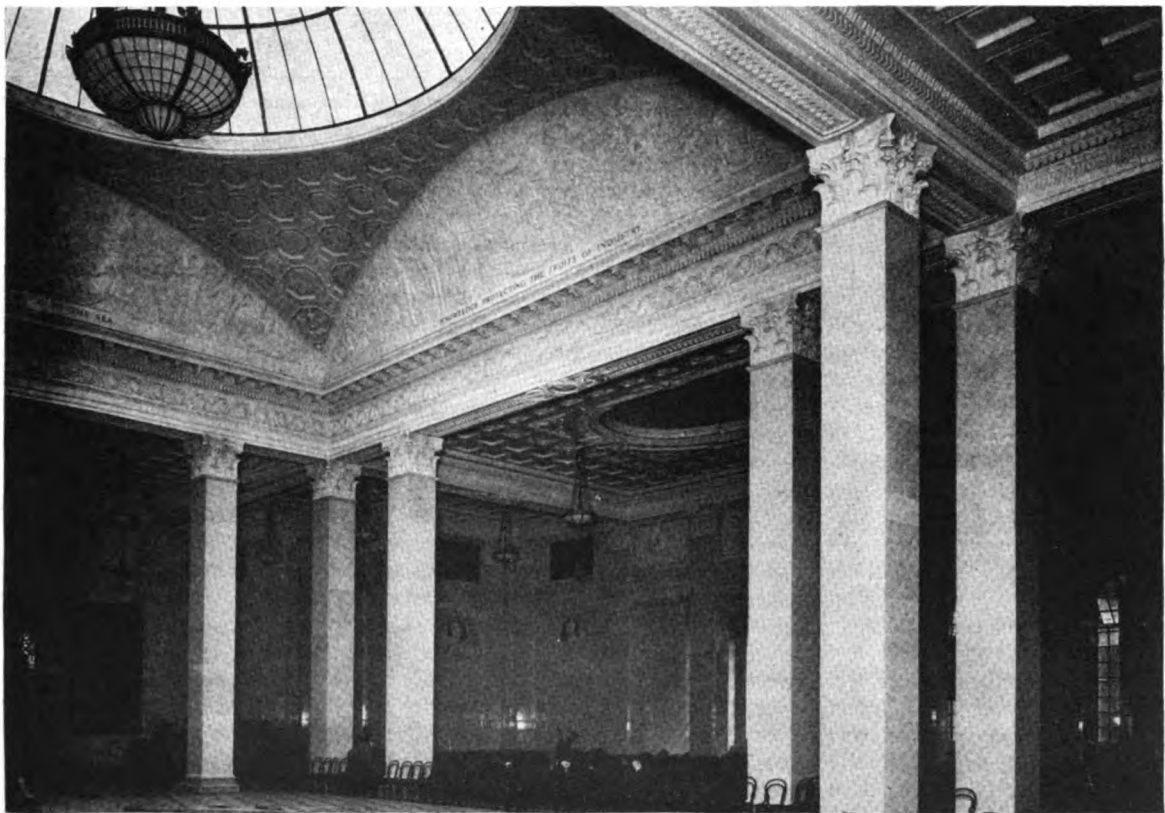
In those days commerce was far more leisurely than it is now, and although the business man would

work long hours he seems to have spent a surprisingly large proportion in coffeehouses, discussing his business in very easy circumstances and apparently mixing it up with a good deal of gossip over interminable cups of coffee, or something stronger. Offices were not so roomy or convenient as they are nowadays, and the coffeehouses and taverns formed the most convenient meeting places for commercial men. So they gradually gathered into cliques, and old Edward Lloyd was quite shrewd enough to see that the tendency could be made very profitable to oust the majority of his numerous rivals in the favor of the shipping community, so took the trouble to provide far greater facilities for business than they had thought of doing.

In his day marine insurance had long been practiced all over maritime

Europe. Possibly it started in the Hanse towns, but they had so many enemies in power that they took very good care not to keep any records that might compromise their members. It was certainly practised in the North Italian ports at the end of the twelfth century, and by Lloyd's time there was quite a flourishing, although absolutely unorganized, marine insurance business in London.

So shipping men began to meet their friends and captains in Lloyd's coffeehouse, to discuss their business and to receive the reports of their voyages. The underwriters got into the habit of going there too, not only to meet the shipowners and to arrange policies, but also to see their captains as that was one of their only means of getting information of conditions abroad, by which they might judge the risks that they were



The Great Hall of Lloyd's New Building in London—It Measures 130 Feet Square

running. Lloyd saw his chance in this also and got into touch with a number of correspondents abroad who gave him reliable information, which he placed at the disposal of the ship-owners and underwriters.

In the year 1692 he moved to Lombard street, principally for the convenience of the underwriters who were then nearly all connected with the big banking houses in some way. He does not seem to have lost very much of his purely shipping connection, although it was rather less convenient for the shipowners. As he succeeded, his boundless energy found expression in numerous ways and the coffeehouse offered facilities, first for selling ships and then for the auctioning of all kinds of merchandise. It was also a favorite rendezvous for the recovery of runaway slaves.

His next venture was to start publishing a shipping paper three times weekly, commencing in 1696. In those days, however, the publication of any sort of journal was regarded with a good deal of suspicion by the authorities and he soon found himself in trouble over it, trouble which resulted in its suppression for a time. However, it was started again in 1726 and has continued publication regularly ever since, an absolutely essential feature of modern shipping and marine insurance.

In due course Edward Lloyd died, a man of substance who was held in very much greater respect than the majority of coffeehouse keepers of that day. The purchaser of his business was wise enough to keep on his name and traditions, and as underwriting became better organized the men concerned in it wanted more complete records than could be amassed by a private individual. So they began to collect them themselves, but still had them housed at the coffeehouse for general consultation. There were disadvantages to this scheme, for strangers could still wander in to drink coffee or to take a curious interest in the business proceedings. It was not long before the underwriters realized that a proportion of these strangers came in to pick up information useful to them without payment, and in the year 1770 they decided to move into their own quarters nearby and to cut out the coffeehouse connection altogether.

Unfortunately they made a most inconvenient choice and business was considerably hampered, so that finally it was decided to build or rent a "New Lloyd's" for their own purposes. Most of the members of the fraternity had very modest ideas, and would be content with anything

a little more convenient and roomy than the premises they had acquired. There was one man however who took different views. John Julius Angerstein, Russia merchant and art collector—incidentally his pictures formed the nucleus of the National Gallery in Trafalgar square, London—maintained that Lloyd's was bound to grow and had infinite promise before it if its members had sufficient courage to take advantage of their opportunities. On his own responsibility he rented very roomy and convenient quarters in the Royal exchange, making himself responsible for what was regarded as the colossal rent of £180 per annum. At first his colleagues were inclined to object, but when they found that he was personally responsible for the rent, and that the deposits that they had put up would be returned to them, they took quite a different view.

To begin with it was scarcely known outside its own particular circle, and although it was primarily founded for the purpose of insuring shipping it is to be feared that all sorts of gambling policies occupied a very large part of the members' time and attention. The lives of rebellious politicians and their chances of losing their heads at the block made an excellent gamble, as did also the life of the King, the chance of a government remaining in power, and a thousand other considerations. Angerstein frowned on these activities and did a lot towards making the reputation of Lloyd's a serious business proposition. The frowning policy is still continued by the committee, but plenty of gambling goes on in a very minor way—it is quite possible to insure against twins or rain during one's summer vacation.

With Angerstein at the helm, Lloyd's went forward steadily and made a reputation for itself all over the world. Foreign merchants insured their ships in London instead of locally, while the information that it collected and carefully collated became the mainstay of shipping as well as the marine insurance.

The importance of full records and immediate information was realized more and more, and under a central control a wonderful organization was built up. Lloyd's was constantly able to give information to the government, even to the first news of its own victories, and soon came to be consulted on various naval matters, particularly on such things as convoys which concerned merchant shipping as well. With these facilities marine insurance became more and more profitable and very large fortunes were made.

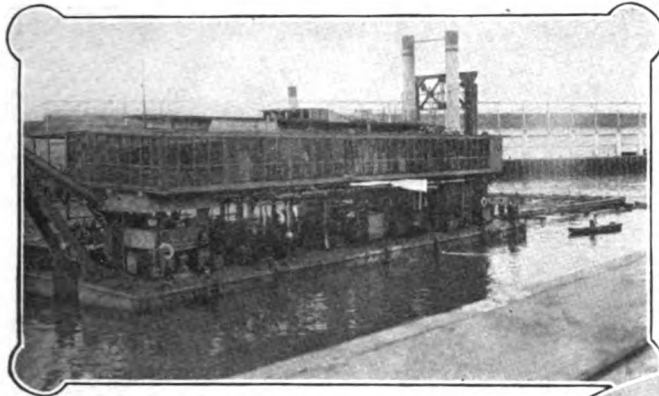
Underwriters interested themselves in anything to do with shipping and instituted a system of rewards for good service, the defense of ships against pirates or enemies, the salvage of ships and cargoes, and particularly fine seamanship. It was the members of Lloyd's who did more than anybody else to make the life-boat possible, by granting the monetary aid and encouragement that was needed at the time. During the French wars the patriotic fund was started, granting hurt awards to seamen and marines and looking after widows and dependents. It must be remembered that in those days the seaman for whom the navy had no further use, unless he was one of the lucky ones who got into Greenwich hospital, was simply turned adrift to fend for himself.

So the corporation flourished, and in the revival of trade that followed some years after the end of the Napoleonic wars everybody connected with shipping prospered exceedingly. Then in 1838 they suffered a terrible blow, for in that year the Royal exchange was burnt down. Priceless records were lost and for some years marine insurance in London was carried on in temporary premises with the greatest difficulty and with the minimum of profit. There were considerable delays in the rebuilding of the exchange and it was not until 1844 that Lloyd's was able to recommence business with the whole eastern end of the building, the premises that they have only just vacated.

It is interesting to note that although the underwriters were among the most progressive business men in the city, they took the greatest pains to maintain the tradition of their original premises when it came to furnishing their new quarters. A large captains' room was provided, in which master mariners could meet their owners at the end of a voyage and make their report, at the same time giving underwriters an opportunity of meeting the captains of the ships which they were covering, which was then the principal influence on the fixing of premiums. The master of a ship does not now count for much in business circles, and his name has even been dropped out of the register, with the result that the captains' room has become purely a dining place for underwriters, and incidentally where they can go on talking "shop" and exchanging views and information. Right up to the end it was furnished very much after the fashion of the old London chop-houses, divided into little al-

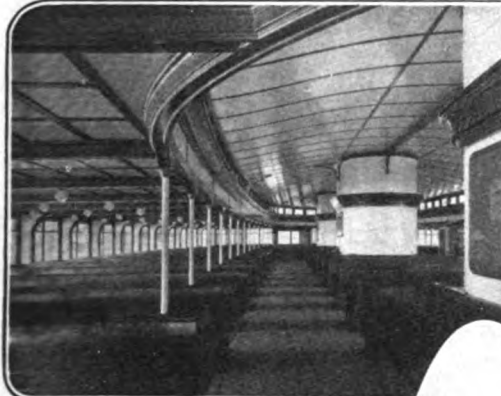
(Continued on Page 56)

Latest Marine Events in Pictures

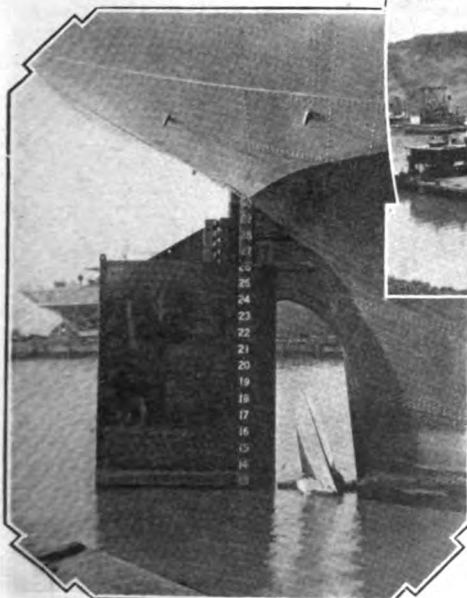


Above—Pipe line suction dredge at work at the dock, inner harbor, Balboa, C. Z. Constant deepening and improving of channels is part of the upkeep of the Panama Canal

Below—Interior of upper cabin of the Key System ferryboat Yerba Buena, built by the Moore Dry Dock Co., Oakland, Calif.

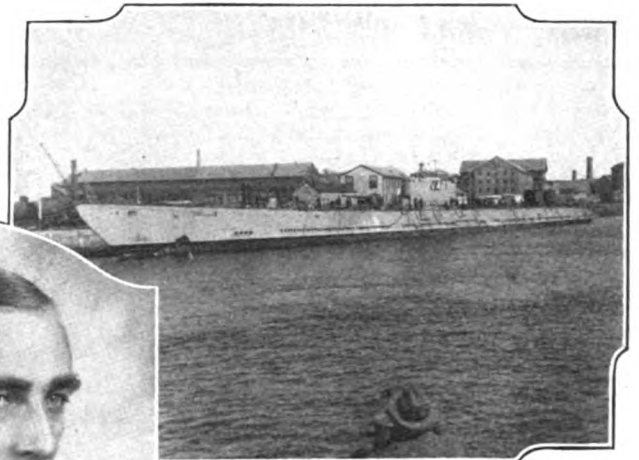


At Right—Panama Canal 250-ton floating cranes, Ajax and Hercules, built in Germany. Also crane boat Lavalley built by the French in 1887



At Left — Oertz streamline rudder on diesel tanker, Sunoil. It lessens resistance

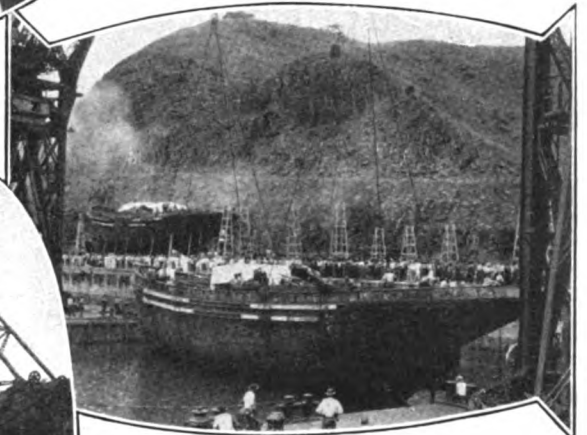
At Right — Self-unloading steamer, John W. Boardman, helpless in ice on Lake Huron at Fort Gratiot light opposite Port Huron



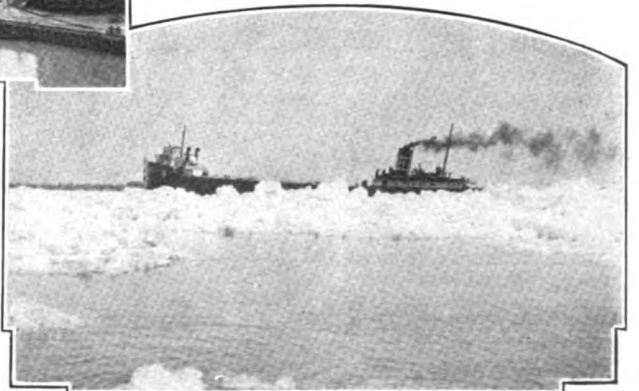
Below—Submarine V-4, largest in the world, also first undersea boat mine layer. Commissioned by the United States navy April 2, 1928, at the Portsmouth, N. H., navy yard where she was built



At Left—Philip DeRonde, founder and for thirteen years, president of Oriental Navigation Co., recently elected chairman of the board of directors of the company



Above—Launching Panama Canal tugs Chagres and Trinidad by lifting them from the side of the drydock with two 250-ton cranes shown at right. Description of these tugs will be found in the April issue of Marine Review, page 52



Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review

By Harry Bowne Skillman

Attorney at Law

IT IS the duty of seamen, whose employment is terminated by seizure of a vessel to satisfy a maritime lien, to endeavor to minimize the damages as much as possible, and either obtain other employment or return to their homes at the earliest date practicable.—*TRADER*, 17 F. (2d) 623.

A SHIPOWNER owes a licensee or invitee no duty to change its customary method of loading, or to guard against his carelessness, said the court in *Swanson v. Luckenbach Steamship Co.*, 17 F. (2d) 735, and was not liable for injury to one while walking along the dock side of the deck by being struck by the accidental swinging of a sling load of timbers being carried from the dock to a hatchway, where he saw the sling and could readily have avoided any danger by passing to the other side of the hatch.

SECTION 32 of the immigration act of 1917, which provides that no alien excluded from admission into the United States, employed on board any vessel arriving from a foreign port, shall be permitted to land, except temporarily, for medical treatment or pursuant to prescribed regulations, applies to seamen if of an excluded class.—*NOWSHERA*, 17 F. (2d) 810.

THAT an injury received by an employe through defective appliances furnished by a ship is actionable against the ship cannot be questioned, and the duty rests upon the ship to furnish appliances reasonably capable of performing the services required.—*REMUS*, 17 F. (2d) 948.

OPEN hatchways on a vessel, which is loading or discharging cargo, are a necessity much of the time, and no one realizes or should realize more than the members of the crew that it is a danger which must exist, and one of the risks incidental to the work in which they are engaged, and which each of them must himself avoid.—*Smith v. United States*, 18 F. (2d) 110.

AS PRESENTLY employed, a seaman is not a mariner in the full sense of the word—a person “who can hand, reef, and steer.” Changing conditions, and necessities for changes, extended the term to include all persons employed in a vessel to assist in the main purpose of the voyage.—*Z R-3*, 18 F. (2d) 122.

GENERAL order of owner of tugs, instructing its captains, when engaged in emergency work in time of storms or other disasters, to first look after the safety of the owner's equipment, and thereafter to render aid to boats of other companies, did not operate to deny a tug captain any and all rewards of salvage service.—*Harris v. New York Central Railroad Co.*, 18 F. (2d) 141.

IMPROPER navigation of another vessel does not excuse adherence to definite rule, when it would plainly invite collision. “Stubborn adherence to rule,” it was said in the case of *KAGA MARU*, 18 F. (2d) 295, “is sometimes a culpable fault.”

IN DETERMINING the measure of recovery of demurrage where a vessel is unreasonably delayed in the unloading of her cargo, the court, in the case of *Interlake Steamship Co. v. 251,000 bushels of corn*, 18 F. (2d) 291, said: “It seems unfortunate that the courts should ever have undertaken to formulate a rule based upon net earnings * * *. A simpler method to pursue would be to determine the average daily gross earnings of the ship, and then to also determine the amount to which the average daily expenses of the ship had been increased or decreased as a result of the unreasonable delay. In some cases it might be reasonably the duty of the steamer to dispense with some of the crew, if the delay were for a long period. The expense for coal very probably would be reduced. On the other hand, there might be necessarily incurred some additional expense for dockage or things of that kind. It would be the duty of the ship to exercise reasonable prudence in making the expense as small as possible. Having determined the average daily increase or decrease in the necessary expenses, * * * then the average gross income of the ship would be increased or decreased in the exact amount that the expenses had been increased or decreased, and the amount so obtained would be the amount to be allowed for each day of the unreasonable delay.”

A LOOKOUT is elementary in navigation and good seamanship, and strict performance of duty is required, and a failure, especially where other craft are known to be in the vicinity, is culpable negligence, and approaches very nearly the line of reckless navigation. The duty is that of the highest importance. The lookout should be stationed forward

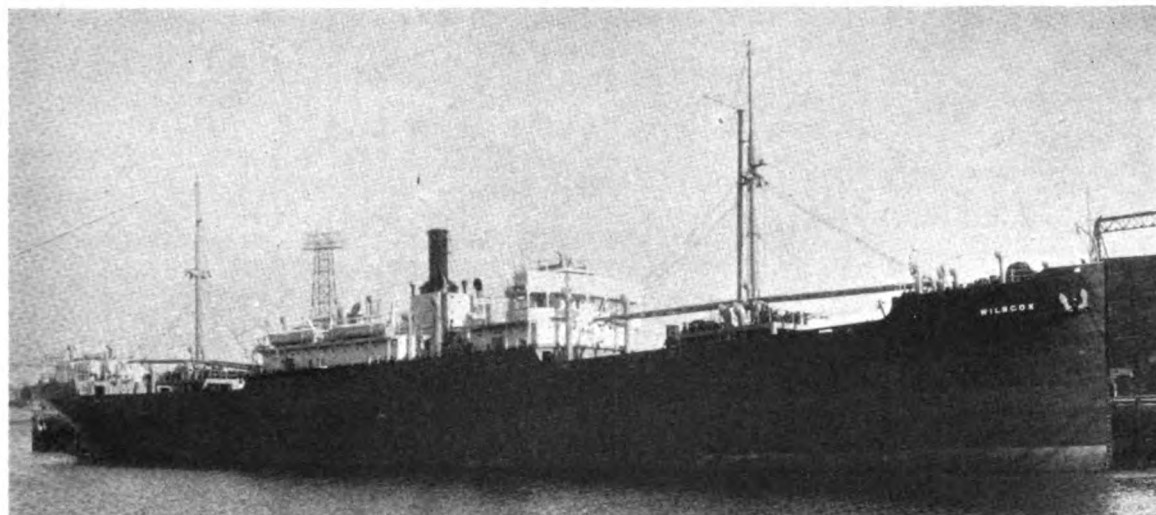
in the “eyes” of the vessel, on the forward part of the vessel, nearer the stem. Persons stationed on the forward deck are nearer the water line and more readily ascertain their exact course. The lookout must devote his attention to this duty. The officer of the deck, or helmsman, cannot serve as lookout. Nor is the vessel relieved of this obligation because it is the preferred vessel, if prudent navigation, with the aid of a good lookout, might have avoided collision.—*KAGA MARU*, 18 F. (2d) 295.

TO SUSTAIN the defense of inevitable accident, the defendant must prove, if the cause of the accident is shown, that he did not by want of care and skill according to the circumstances contribute to it, or that he could not have prevented it by the exercise of much care and skill. On the other hand, if the cause is not shown, then the defendant must show all possible causes, and that he was not responsible for any of them.—*OSCEOLA*, 18 F. (2d) 415.

UNDER a charter party providing that lay days shall commence from the time the vessel is ready to receive or discharge cargo, no matter when the ship reports herself ready, lay days cannot begin to run until she is so in fact, the burden of establishing which is on her.—*F. S. Royster Guano Co. v. United States*, 18 F. (2d) 469.

SHIPPING articles of alien seamen for a voyage from the United States to a port, or ports, in the West Indies, and thence back to the United States, signed before the captain, were valid; it was not necessary that they be signed before a United States shipping commissioner.—*ELLA PIERCE THURLOW*, 18 F. (2d) 675.

THE duty of a wharfinger for hire to use reasonable care to furnish a safe berth is beyond dispute, and has been settled in many cases, it was declared by the court in the case of *United States Trucking Corp. v. City of New York*, 18 F. (2d) 775. The court proceeded: “It is a sufficient discharge of his duty, if he warns vessels who use it, though the burden is on him to show that this was done.” The court held that a visible deck house of a sunken wreck alongside a pier was sufficient notice of an obstruction in the berth to coal hoister, damaged by coming in contact with the bow of the wreck at low water.



M. S. Wilcox—Double Acting New London Ship & Engine Diesel—Converted at Fore River Plant, Bethlehem S. B. Corp.

M. S. Wilcox Completes Sea Trials at Boston with Marked Success

By H. R. Simonds

WHEN the M. S. WILCOX finished her sea trials April 18 it marked the completion of the shipping board's program on dieselization of twelve former steamships built during the war. This is a notable achievement in shipping, and means an advance in the development of the diesel engine which otherwise would have taken many years.

The trial of the WILCOX was highly successful. The weather was perfect and the various tests were run off without hitch or interruption. The engine, which is of the M. A. N. type, was built by the New London Ship & Engine Co. and operated perfectly. At full speed it was difficult to detect any vibration even close to the engine room. The work of converting her from steam to diesel drive and in making alterations was done at the Fore River plant of the Bethlehem Shipbuilding Corp., Quincy, Mass.

Rated at 12.5 knots, the WILCOX developed 12.9 knots on the outward trip and 12.8 on the return. The main engine, incidentally, was the only one of the twelve diesel engines under this program to run through the thirty-day shop trial without stopping. While this shows excellent performance it is not fair to make any

comparison because some of the other trials were interrupted by failure of electric power or other cause beyond the control of the manufacturer.

Under test the oil consumption was .43 pounds per brake horsepower, and the lubricating oil averaged 20 gallons

in twenty-four hours steady running.

It took a year and a half to build the engine in a plant which specializes in the production of diesel engines. The New London Ship & Engine Co. started building diesel engines in 1909 to avoid the use of gasoline in submarines. At this time the company made arrangements with the M. A. N. interests in Germany to build diesel engines in this country following that company's plans and specifications. In 1917 the German company built the first two-cycle, double acting diesel engine. This was rated at 12,000 horsepower. It was put through its shop trials and was operated successfully but was never put in the ship for which it was intended, and after the war it was broken up under the terms of the peace treaty. Based on experience gained from the construction of this large engine the M. A. N. interests started in 1919 on an aggressive program of development of the double acting, two-cycle engine, and by 1924 had completed the first commercial engine of this type. This engine proved highly successful and the New London Ship & Engine Co. immediately became interested and secured exclusive rights for building diesel

Master of the Wilcox

Capt. W. T. George, of the M. S. WILCOX was born of seafaring folk in South Wales, but has had twenty-one years' service on American vessels. Previous to his present commission he was for two years captain of the S. S. SATARTIA, American Republics Line, and previous to that he was captain of the S. S. WEST CALUMB. He has had remarkable experience in salvage work and in giving aid to distressed vessels. In 1921 while captain of the S. S. TRIUMPH he towed the WEST GALOC a thousand miles to Boston, and while towing stopped and removed the crew from a disabled British schooner. In 1923 he towed the WEST KEBAR 860 miles to Quebec. He has been with the shipping board ever since it started and now makes his home at Westwood, N. J.

engines of this type for submarine use. About this time the shipping board became interested in this design of double acting, two-cycle engine and let contracts for two of about

TABLE I

General Characteristics of Vessel

Length over all, ft., ins.	516—0
Length, B. P. P., ft., ins.	402—0
Beam molded, ft., ins.	54—0
Depth molded at side to shelter deck, ft., ins.	33—9
Displacement at normal mean load draft, tons	13,010
Gross tonnage, U. S.	5,868
Net tonnage, U. S.	3,673
Normal mean load draft, ft., ins.	26—10 $\frac{3}{4}$
Deadweight in tons on mean load draft	9,235
Bale capacity, not including deep tanks, cu. ft.	447,800
Capacity of deep tanks—salt water, tons	1,051
Capacity of fuel oil tanks, tons	760
Normal speed, service conditions, knots	12.5

3600 horsepower size to be built for use in two of the vessels being converted. The first one, which was built by Hooven, Owens, Rentschler Co., Hamilton, O., is now in service in the M. S. SEMINOLE.

After the trial the M. S. WILSCOX docked at the Army supply base pier, South Boston, where she was immediately taken over by the operator, C. H. Sprague & Co., who will put her in service on the American Republics line between Boston and South American ports. After the first round trip it is planned to transfer the WILSCOX to the Roosevelt line for round-the-world service.

In hull and auxiliary equipment she is similar to that of several previous vessels in the conversion program which have already been described in MARINE REVIEW, particularly the SEMINOLE, the story of which appeared in the December issue. The

TABLE II

Wilcox Conversion Costs

Installation and alterations	\$416,000
Main engine, including spares	253,500
Deck machinery, including steering gear, motors, control and cable	28,900
Engine room auxiliaries, including engines, generators, pumps, coolers, switchboard, cable	95,000
Equipment and outfit	25,000
Engineering, purchasing, inspection, traveling, freight, extras, trial trip and incidentals	38,000
	\$856,400

deck arrangement differs from all but the SEMINOLE, and in minor details differs from her.

The main engine is similar in design to that of the SEMINOLE and has a brake

horsepower rating of 3680, which it is believed makes it the largest double acting, two-cycle diesel engine in the American merchant marine. Records of the official thirty-day test of this engine were published in MARINE REVIEW for August, 1927. The performance of the engine on its trial trip was the object of much favorable comment on the part of prominent engineers who were guests. Engineers of the New London Ship & Engine Co., although following closely the design of the M. A. N. interests, made several changes to adapt the engine to American practice and conditions. One change was with the intake valves; the original design calls for four, two of these were eliminated and the other two modified.

Sunny skies and a light off-shore

breeze made conditions for the trial excellent, not only for the performance of the boat but for the comfort of the guests as well. Those who attended a similar trial out of New York harbor last fall remarked on the advantage that Boston harbor has for sea trials of this sort. Within a few minutes after leaving her anchorage in the harbor the WILSCOX was in deep water and thus able to start her official six-hour run. At New York it was found impossible within the limits of one day to reach water in excess of 80 feet in depth, and part of the trial was conducted at a 40-foot depth which was considered a real handicap. At Boston there are several measured distances easy to pick up and these simplify speed determination. Navigators said the

TABLE III

Main Engine and Auxiliaries on M. S. Wilcox

Main Engines

Make: New London Ship & Engine Co.
Type: Double Acting; 2-cycle; air injection
Diameter of working cylinders: 27.55 inches.
Stroke: 47.24 inches.
No. of cylinders: 4.
Brake horsepower: 3680.
Revolutions per minute: 115.
Piston speed: 905 feet per minute.
Fuel nozzles: 1 top; 2 bottom.
Two air starting tanks: capacity 550 cubic feet each.
Working pressure: 400 pounds. (Maximum).
Cooling: Jackets—salt water, and pistons—fresh water.
Maxim silencer.

Auxiliary Engines

3, Make: Worthington Pump & Machinery Corp.
Type: Single acting; 2-cycle; air injection.
Diameter of working cylinders, 12 $\frac{1}{2}$ inches.
Stroke: 13 $\frac{1}{4}$ inches.
No. of cylinders: 3.
Brake horsepower: 115.
Generators: 75-kilowatts—240 volts, Ridgeway.
Cooling: Jackets—salt water, pistons—oil.
Revolutions per minute: 265.
Piston speed: 685 feet per minute.
Excess air capacity: 170 cubic feet each.
Maxim silencer.
Emergency Lighting and Compressor Set
Make: Mianus Diesel Engine Co.
Type: Single acting; 2-cycle; solid injection.
Diameter of working cylinders: 5 5/16 inches.
Stroke: 7 $\frac{1}{4}$ inches.
No. of cylinders: 3.
Brake horsepower: 22.
Revolutions per minute: 550.
Piston speed: 663 feet per minute.
Cooling: Salt water.
Generator: 14-kilowatt Diehl.
Rix compressor.
Maxim silencer.

Pumps, Water

Make: Nash Engineering Co.
Salt water cooling: One 750 gallons per minute, self-priming, centrifugal-motor, General Electric, 30-horsepower.
General service: One 750 gallons per minute, self-priming, centrifugal-motor, General Electric, 30-horsepower.
Fire: One 200 gallons per minute, centrifugal-motor, General Electric, 20-horsepower.
Engine room bilge: One 300 gallons per minute, self-priming, centrifugal-motor, General Electric 7 $\frac{1}{2}$ -horsepower.
Fresh water: (portable) One 70 gallons per minute, centrifugal-motor, General Electric, 7 $\frac{1}{2}$ -horsepower.
Sanitary: One 70 gallons per minute centrifugal-motor, General Electric, 7 $\frac{1}{2}$ -horsepower.

Fresh water: (piston cooling) Two 200 gallons per minute, self-priming, centrifugal motor, General Electric, 7 $\frac{1}{2}$ -horsepower.

Pumps, Oil

Make: Kinney Manufacturing Co.
Lubricating Oil: Two rotary plunger, 150 gallons per minute—motor General Electric, 7 $\frac{1}{2}$ -horsepower.
Fuel oil transfer: One rotary plunger, 250 gallons per minute—motor General Electric Co.

Boiler

Vertical type, working pressure 110-pound gage—173 square feet heating surface.
Oil burner: Todd Rotary.

Ice Machine

York, 2-ton ammonia direct expansion type, direct driven Diehl motor, 235 revolutions per minute.

Propeller

Four-bladed built up type.
Diameter: 16 feet, 3 inches, pitch 12 feet, 0 inches.

Steering Control

Sperry telemotor—Westinghouse control panel—automatic, hand with automatic followup, hand nonfollowup.

Winches

10 cargo—1 warping—Lidgerwood Mfg. Co., self-oiling, special design—electric driven, Westinghouse motor and control—quick make and break type controller. Winches fitted with Cutler-Hammer shoe brakes.

Windlass

Rebuilt for motor drive, Westinghouse 45-horsepower motor and control panel—Cutler-Hammer shoe brake.

Fire Extinguishing System

Walter Kidde, CO₂. Lux system, eighty 50-pound cylinders for CO₂, twenty hand CO₂ containers, four 2 $\frac{1}{2}$ -gallon hand acid type, fire main (water).

Radio

1-kilowatt spark and 2-kilowatt arc.

Galley

Range: New York French Range Co., oil fired, fitted with Ray burner.
Coffee urn and water boiler: Electric—Automatic Electric Heater Co., radiant type, specially designed—4 kilowatts. Capacities: Coffee, 5 gallons, water 14 gallons.
Hot water heaters: Main—Automatic Electric Heater Co., 4.5 kilowatts—100 gallons. Crew—Automatic Electric Heater Co., 1.5 kilowatts—16 gallons.

Whistle

Sperry—Visible type.

Searchlight

Sperry—Incandescent, 1000 watts.

Oil Separators

Manufactured by De Laval Separator Co.: two for fuel oil, 300 gallons per hour of pressure type, one for lubricating oil, 160 gallons per hour of open type.

WILSCOX handled beautifully. The rapid swing in negotiating figure eights was particularly noticeable to all.

The boat's equipment is featured by modern gyro compass room, modern signal devices and unusually comfortable quarters for officers and seamen. The galley is provided with an oil burning range, electric refrigerator, electric water heaters and many other electric appliances.

A visit to the crew's quarters is a study in contrast to any one familiar with similar quarters in vessels built even ten or twelve years ago. The

seamen's staterooms compare favorably with some of the passenger accommodations on many liners. Each

TABLE IV	
Oil Consumption and Speed M. S. Wilscox	
Propeller R. P. M.	115
Main engine B. H. P.	3680
Fuel per B. H. P. per hour.....	.43
Lubricating oil per 24 hours, in gallons	20
Checked mileage on trial, knots....	12.85

stateroom accommodates two men and is provided with steam heat, running hot and cold water, lockers and two

comfortable bunks. In a central space among the seamen's quarters is a small club room with table and comfortable seats for lounging and smoking or writing.

A feature of unusual convenience on the WILSCOX is an interior stairway leading directly from the captain's quarters to the chart room which connects with the compass room and the bridge.

Although the main engine is similar to that in the SEMINOLE it is still the chief feature of the WILSCOX because these two engines are the only

(Continued on Page 54)

Coal—Direct from Ship to Shore Bins

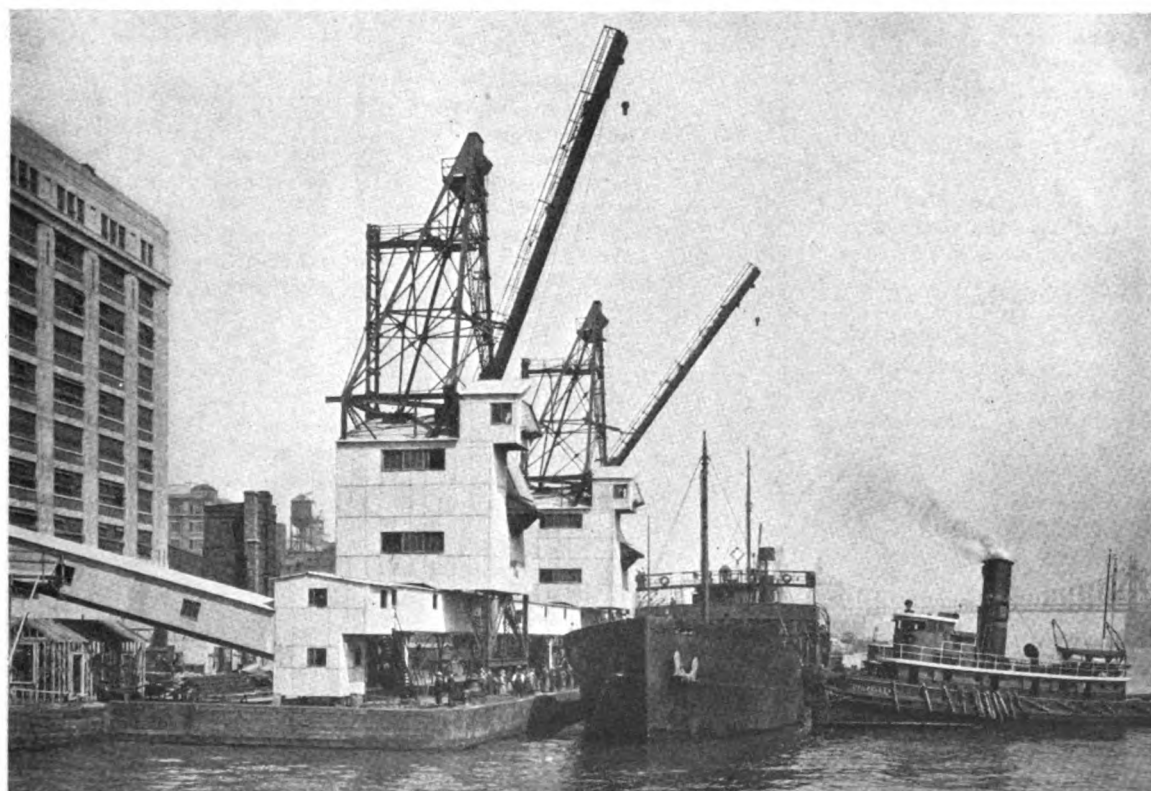
A NEW coal hoisting system that unloads coal directly from ocean-going vessels into the power generating stations of the New York Edison Co. located on the East river at Thirty-eighth to Fortieth streets, has recently been put into operation with the unloading of the Pocahontas Steamship Co. collier BRISTOL from Norfolk.

The effect of the new coal hoisting system, an official of the New York Edison Co. said, is to broaden

the company's coal market, so that now coal may be obtained either by ocean-going colliers or by rail. Also, the new system can unload coal from moored colliers into barges for transport to the other power generating plants of the company, as required.

In the new system the bucket hoist is only 60 feet. The clamshell buckets place the coal on belt conveyors, one of which is 395 feet long, for the remaining elevation of

100 or more feet to the bunkers. These long conveyors reach out to 30-foot deep water, where ocean-going vessels can be moored. Two steel towers for hoisting the grab buckets travel on rails, permitting the buckets to be dropped into the various hatches without moving the vessel. The two buckets have a capacity of 350 tons an hour each. The BRISTOL, the first collier to be unloaded by the new system, carried 6600 tons.



S. S. Bristol of the Pocahontas S. S. Co. Discharging at Edison Co.'s New Coal Dock—East River, N. Y.

Lake Carriers Elect Officers

Annual Meeting Held in Cleveland—Expect Increase in Draft—
Pulverized Coal for Ship Use—Project To Deepen Channels and Harbors

THAT the business of the Lake Carriers association is efficiently organized and conducted under the leadership of its president, J. S. Ashley, was very evident at the annual meeting of the association held at Cleveland, April 19. The smoothness, precision and entire absence of anything resembling criticism and wrangling with which the business of the meeting was carried on can only mean that to the members of this powerful association the conduct of its affairs is entirely satisfactory. Disregarding the ordinary rules of procedure at the end of the general meeting Harry Coulby, president of the Pickands, Mather & Co. and for many years a leading figure among lake operators, proposed that Mr. Ashley having carried on the duties of his important office in such an eminently successful manner be re-elected by acclamation. This was done. Both Mr. Ashley and Mr. Coulby referred to the invaluable services of Mr. Sabin from an engineering standpoint since his appointment as vice president in 1925.

The usual routine, election of the board of directors, executive committee and officers was of course attended to but the talk by Carl J. Jefferson, head of the fuel conservation committee of the United States shipping board, on the practical development up to the present time of pulverized coal for ship installations made the hit of the meeting.

Use of Pulverized Coal

In a clear, simple, straightforward manner, Mr. Jefferson related the story of the progress made in practical experiments with pulverized coal for ship use. He illustrated his talk with freehand drawings and lantern slides. It was pointed out that the S. S. MERCER, a shipping board freighter has made two transatlantic voyages using pulverized coal and that she is now engaged on her third voyage and that the experience with this vessel and the minor difficulties that have come up have given those responsible complete confidence in the practicability of burning pulverized coal on ships. Nowhere else in the world would the application of this system of firing be more logical and more useful than on the Great Lakes, Mr. Jefferson pointing out that nearly



J. S. ASHLEY
Re-elected President, Lake Carriers

Officers

Lake Carriers' Association

President

J. S. Ashley

Vice President

L. C. Sabin

General Counsel

Newton D. Baker

Secretary and Treasurer

George A. Marr

Executive Committee

J. S. Ashley, chairman; H. S. Wilkinson, C. L. Hutchinson, H. Coulby, J. S. Wood, J. J. Boland, G. A. Tomlinson, J. C. Evans, A. E. R. Schneider, A. F. Harvey, H. K. Oakes

Alternates

J. T. Kelly, A. C. Sullivan, W. P. Schaufele, W. H. McGean, J. B. Ayers, James McAlpine, A. H. Ferbert, W. G. Stewart, A. E. Cornelius

Directors

Cleveland

J. S. Ashley, J. B. Ayers, Carmi A. Thompson, Newton D. Baker, Fayette Brown, C. C. Canfield, H. Coulby, R. W. England, A. H. Ferbert, A. F. Harvey, C. L. Hutchinson, Chas. O. Jenkins, John T. Kelly, Joseph S. Wood, F. I. Kennedy, A. T. Kinney, Walton H. McGean, H. K. Oakes, C. J. Peck, L. C. Sabin, W. P. Schaufele, A. E. R. Schneider, George M. Steinbrenner, H. C. Strom, W. G. Stewart, G. A. Tomlinson, Geo. H. Warner and George A. Marr.

From Other Cities

J. J. Boland, J. C. Evans, J. B. Rodgers and A. E. Cornelius of Buffalo, H. F. Hughes and A. C. Sullivan of Chicago, W. P. Snyder, Jr. of Pittsburgh and H. S. Wilkinson of New York

all vessels in these waters are now coal burners. The advantages where coal is plentiful and cheap while oil is expensive is self-evident and such is the case on the Great Lakes. In various past issues of MARINE REVIEW and particularly in the February number, have appeared descriptions of the MERCER installation and preliminary development work. The rather startling suggestion was made that the two famous ex-German ships, MT. VERNON and MONTICELLO (formerly the AGAMEMNON), be reconditioned as pulverized coal burners with present machinery. If so reconditioned Mr. Jefferson said, only the same personnel would be required in the fireroom as if oil were used.

In conclusion he said, "Pulverized coal has made its first cruise. I grant you that as yet he is only a single striper but he is a pretty 'savey' youngster and a dog-gone good shipmate. He will stand his watch and bear a strong hand on all field days. He is young and still has the ways of a land lubber—but he is mighty willing to learn and it won't be long before he will be able to hang up his ticket and sail with the best of them."

Welfare Plan Shows Results

Col. E. H. Whitlock, smoke commissioner of the City of Cleveland in a brief talk spoke of the work being carried out under his direction to eliminate the smoke nuisance. He thanked the operators for their practical co-operation and said that as far as the ships were concerned instances of dense smoke have been reduced by 50 per cent in the past year.

George M. Steinbrenner, chairman of the welfare committee reported that the work of the committee, due to the active co-operation of all members and George A. Marr, secretary-treasurer of the association, had been productive of excellent results. In the school work carried out under the direction of the committee 125 students successfully passed their examinations which was an increase of 19 per cent over the winter of 1927. Of this number 34 received original engineers' licenses and 37 original pilots' licenses. Forty of the engineer students and 14 of the navigation students were raised in grade. Mr. Steinbrenner emphasized

the fact that the business of shipping on the lakes absorbs each year all the graduates of the Lake Carriers' school and that during midsummer and fall the commissioners find it difficult to secure suitable men for vacancies. This condition makes it an imperative necessity instead of what was conceived as a welfare plan to continue the work along this line.

Still more active support of the welfare plan was suggested. By such interest better operation would be obtained because of the small labor turnover and improved discipline and character of personnel. The maintenance and running cost would thus be lessened.

Shore Captains' Committee Reports

A report on the activities of the shore captains' committee was made by Capt. R. W. England, chairman. This committee held many meetings whenever occasion required and recommended the drafts from time to time which were considered safe for loading. A special study was made by the committee on all matters in connection with radio beacons and there is no longer any complaint about scarcity of stations. It is rather now a problem of preventing any conflict in signals. A large number of the vessels of the association are equipped with the radio



GEO. A. MARR
Re-elected Secretary-Treasurer, Lake Carriers

direction finder which according to Captain England has proved to be one of the most valuable aids to navigation that has been developed in these latter years not only as regards safety but in making better time with safety. By efforts of the committee the lightship at Milwaukee

was continued for the time being at her station there. The improvement of the Cuyahoga river has been taken up with the officials of the City of Cleveland.

The revision and codification of the navigation laws drafted by the United States shipping board was studied by the committee and recommendations were made. In this work the shore engineers aided the committee. A bill for introduction to congress was drafted by the committee after much study on the rules governing anchor lights and ships lying at anchor as far as their lights are concerned. It became apparent that the present rules were inadequate as there had been a number of serious collisions between ships lying at anchor and vessels under way.

Members of the committee appeared with Messrs. Baker, Sabin and Marr, officers of the association, before the board of engineers at Washington in connection with the new project for deepening the channels and harbors of the Great Lakes. Incidentally, and this was not in Captain England's report, Col. Spencer Cosby, U. S. A. division engineer at Cleveland, pointed out in his address at the banquet that this project called for a deepening of all harbors and channels so as to permit a draft of 22 feet or 24 feet depending upon which recommendations were accepted. This proposal is now receiving the study of the chief of engineers and will be submitted to congress shortly. Favorable action by congress is expected. An expenditure of \$40,000,000 maximum is estimated. If this work is done the Great Lakes will be ready to receive ocean shipping when the St. Lawrence waterway has been made navigable for large ships to the sea.

During the past year Captain England remarked that there had been only one violation of Lake Carrier rules presented to the committee. Tribute was paid to the services on the committee of Captain Donner of the Reiss Steamship Co., located at Sheboygan, Wis., particularly in matters pertaining to Lake Michigan. Captain Peterson, marine superintendent of the Boland and Cornelius line, Buffalo, a new member of the committee, gave valuable assistance due to his perfect familiarity with all the problems of the Port of Buffalo and the St. Lawrence river and Lake Ontario.

In closing Captain England said, "Vice President Sabin with his engineering knowledge on the one hand has made more work for the committee, but we believe he has compensated for that by his great aid and

advice on all matters pertaining to the rivers and harbors, and Mr. Marr your secretary has with his usual efficiency and care seen to it that all matters that were to be presented were material, and arranged in such a way that no unnecessary delay ensued at the meetings, and the



L. C. SABIN
Re-elected Vice President, Lake Carriers

business of the committee has been transacted with rapidity and complete understanding through the co-operation of these two officers."

Eighty-four per cent of the total tonnage controlled by members of the Lake Carriers association was represented at the meeting. The officers, members of the executive committee and board of directors were re-elected at the meeting with but few changes, due to death and resignation, from last year. A complete list will be found in the accompanying box. The annual report was not read at the meeting as printed copies had been distributed to all members some time ago.

Protective Association Meets

Members of the Great Lakes Protective association met in the afternoon to receive copies of the annual report which was ready in book form. J. S. Ashley as chairman presided. Ninety-six per cent of the tonnage was represented. The association was addressed by its counsel Harvey D. Goulder. Mr. Goulder emphasized the original purpose of the association which was to use vigilance in the protection of life and property, and that it is the measure of success of such efforts which reduces the cost of insurance.

(Continued on Page 56)

Traffic in Suez Canal

The ocean trade of the world must be definitely increasing as the reports from the Panama and Suez canals indicate record transits during 1927. In MARINE REVIEW for April appeared an article on traffic through the Panama canal. According to Counsel John L. Bouchal, Port Said in his report to the department of commerce, all previous records for traffic passing through the Suez canal were broken last year. Records were broken in the number, net tonnage, cargo tonnage and tolls received.

During 1927, 5544 vessels transited the canal, 171 more than the previous record of 1925; the net tonnage totaled 28,965,000 or 2,203,000 tons higher; the cargo tonnage amounted to 29,524,000 or 2,946,000 tons more and the tolls received were valued at 208,650,000 gold francs or about 15,000,000 francs, equivalent to \$3,000,000 higher than any previous record.

The Peruvian submarine, R-3, was launched at the plant of the New London Ship and Engine Co., Groton, Conn., April 21. The craft was christened by Mrs. Howe, wife of

A. G. Howe, chief of the United States naval mission to Peru.

Marine Statistics for Jacksonville

(Exclusive of Domestic)

Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1928	25	65,435	28	68,630
February	31	70,881	28	58,896
January	26	71,686	27	71,721
December	25	59,744	27	72,636
November	33	72,807	30	74,376
October	26	66,539	24	62,881
September	21	56,916	24	58,165
August	30	77,997	31	86,771
July	26	69,813	27	63,595
June	32	79,910	26	65,919
May, 1927	31	73,616	32	70,715

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

Quotations Corrected to April 19, 1928 on Future Loadings

NOTE: FREIGHT RATES STEADY WITH SLIGHT CHANGE

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cargo	Finished steel	REMARKS	From North Pacific	Lumber
					cu. ft. 100 lbs.		Freight Offered	Ports to	Per m. t.
Liverpool.....	1s 9d†	\$0.60	\$0.40	0.20	\$0.50 \$0.90	\$8.00T***	Poor	San Francisco.....	\$3.75 to 4.00
London.....	1s 9d†	0.60	0.40	0.20	0.50 0.90	8.00T***	Poor	South California.....	4.00 to 4.50
Oso.....	\$0.11	0.45	0.50	0.30	0.42½ 0.85	8.00T	Quiet	Hawaiian Islands.....	9.00 to 10.00
Copenhagen...	0.11	0.45	0.50	0.30	0.50 1.00	8.00T	Quiet	New Zealand.....	15.00 to 18.00
Hamburg.....	0.09	0.55	0.45	0.22	0.50 0.90	10.00T	Quiet	Sydney.....	11.00 to 13.50
Bremen.....	0.12	0.35	0.45	0.22	0.50 0.90	10.00T	Good	Melbourne-Adelaide....	12.00 to 14.00
Rotterdam and Amsterdam....	0.10	0.32½	0.35	0.23	0.40 0.75	9.50T	Fair	Peru-Chile.....	11.75 to 14.00
Antwerp.....	0.09	0.32½	0.30	0.23	0.45 0.80	7.50T	Quiet	South Africa.....	17.00 to 20.00
Havre.....	0.09	0.55	0.31	0.30	0.45 0.80	9.00T	Quiet	Cuba.....	14.00 to 15.00
Bordeaux.....	0.09	0.55	0.31	0.30	0.45 0.80	9.00T	Quiet	United Kingdom.....	67s 6d to 70s
Barcelona.....	0.10	0.50	0.30	10.00 bags	—12.00T—	10.00T	Fair	Baltimore-Boston range..	\$13.50 to 14.50
Lisbon.....	0.10	0.65	0.45	8.00T bags	—23.00T—	8.00T	Fair	Florida Range.....	No rates
Marseilles.....	0.10	0.65	0.40	7.00 bags	—23.00T—	8.00T	Fair	Buenos Aires.....	14.00
Genoa.....	0.14	14.25T	0.50	9.00	—23.00T—	11.50T	Fair	South America — East Coast.....	14.00 to 17.00
Naples.....	0.14	14.25T	0.50	9.00	—23.00T—	11.50T	Fair	South America — West Coast.....	11.75 to 14.00
Constantinople.	0.27	20.00T	0.85	0.40½	—24.00T—	11.50T	Quiet	China.....	9.50 to 10.00
Alexandria.....	0.20	20.00T	0.85	0.40½	—24.00T—	11.50T	Quiet	Japan.....	8.25 to 9.25
Algiers.....	0.75	0.60	0.60	8.0T bags	—23.00T—	11.50T	Fair	Japan (logs).....	12.00 to 14.00
Dakar.....	17.00	.....	.....	15.50T	—23.00T—	11.50T	Fair	Atlantic—Gulf.....	12.00 to 13.00
Capetown.....	18.00	.....	.....	13.00	20.00	13.00 to 18.00	Quiet		
Buenos Aires....	22.00T	.....	.....	.....	20.00 to 22.00T†	8.00 to 8.80T	Poor		
Rio de Janeiro ..	22.00T	.....	.....	.....	20.00 to 22.00T†	7.00 to 7.70T†	Poor		
Pernambuco.....	22.00T	.....	.....	9.00T	—22.00T—†	9.70T†	Poor		
Havana.....	0.35*	0.50	.....	0.30*	0.61 1.33	10.00	Fair	Flour and Wheat	
Vera Cruz.....	0.25	0.30	0.35	0.25	0.52½ 1.05	0.30 to 0.35	Fair	U. K. and Continent (gross ton).....	27s to 30s
Valparaiso.....	1.07	.....	.....	0.70	.....	10.00T	Fair	Oriental Ports (net tons)...	\$3.50 to 4.50
San Francisco..	0.35 to 0.70	.....	0.40 to 1.10	0.40 to 1.10	.....	0.25 to 0.30	Fair		
Sydney.....	18.00T	1.25	18.00T	18.00T	18.00-24.00T	9.00 to 12.—T	Very light		
Calcutta.....	.....	0.60	10.00T	—16.00T—	.....	10.00T	Fair		

T—Ton. †Per quarter of 480 lbs. ‡Landed. ††Heavy products limited in length. *Extra charge for wharfage. **Plus \$0.50 surcharge on all rates to Rio de Janeiro on account of congestion. ***Plus 15 per cent.

Principal Rates To and From United Kingdom

	s	d		s	d
Grain, River Plate to United Kingdom..	22	9	Pig iron, United Kingdom to New York or Philadelphia.....	12	6
Coal, South Wales to Near East.....	9	0	Iron ore, Bilbao to Cardiff.....	5	9
Coal, United Kingdom to Buenos Aires..	10	6	Iron ore, Huelva to Phila. or Balto.....	11	6
Manganese Ore, Poti to Philadelphia....	83.55				

Bunker Prices

At New York

	Coal alongside per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
June 18, 1927.	5.50	1.71½	5.39c
July 19.....	5.65	1.65	5.24
Aug. 19.....	5.50	1.71½	5.15
Sept. 20.....	5.65	1.65	5.04
Oct. 20.....	5.65	1.61	5.13
Nov. 18.....	5.50@5.65	1.46½	5.15
Dec. 20.....	5.35@5.65	1.41½	5.15
Jan. 19.....	5.25@5.60	1.41½	5.15
Feb. 20.....	5.25@5.60	1.40	4.92
Mar. 20.....	5.00@5.60	1.40	4.92
April 19, 1928	5.00@5.60	1.40	4.92

At Philadelphia

	Coal trim. in bunk per ton	Fuel oil alongside per barrel	Diesel Eng. oil alongside per gallon
June 18, 1927.	5.00@5.25	1.70	5.12@5.14c
July 19.....	5.00@5.25	1.65@1.70	5.10@5.12
Aug. 19.....	5.25	1.70@1.71	5.12@5.14
Sept. 20.....	5.25	1.62@1.65	5.12@5.13
Oct. 20.....	5.65	1.56	.....
Nov. 18.....	5.20@5.65	1.45@1.46	4.88@5.12
Dec. 20.....	5.20@5.65	1.32@1.35	4.88@5.12
Jan. 19.....	5.25@5.60	1.22@1.25	4.90@5.12
Feb. 20.....	5.25@5.60	1.21@1.25	4.90@5.12
Mar. 20.....	5.00@5.60	1.21@1.25	4.64@4.87
April 19, 1928.	5.00@5.60	1.21@1.25	4.64@4.87

Other Ports

Boston, coal, per ton.....	.....
Boston, oil, f. a. a., per barrel.....	.....
Hampton Roads, coal, per ton, f.o.b., piers, \$4.25 to 4.50	.....
April 5 — Cardiff, coal, per ton.....	12s 9d
London, coal, per ton.....	—d
Antwerp, coal, per ton.....	19s 0d
Antwerp, Fuel oil, per ton 80.0d	.....
Antwerp, Diesel oil, per ton.....	90s 0d
British ports, Fuel oil.....	70s 0d
British ports, Diesel oil.....	85s 0d

NOTE: Lighterage rates on fuel in New York reduced from 6¼ to 5½¢ per barrel. The coal strike in Britain is now settled and freight rates or bunker prices for coal or pig iron are again quoted.

General cargo rates to Havana change daily and are omitted for the time being.

Rates to Calcutta are subject to change without notice. Cotton goes only to Bombay. Landing charge of \$2.00 per freight ton at Valparaiso.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	548	2,338,855	578	2,449,705	
February	513	2,205,204	501	2,185,910	
January	540	2,160,576	512	2,146,026	
December	436	1,770,154	548	2,222,409	
November	453	2,243,752	474	2,069,106	
October	485	2,105,364	531	2,221,372	
September	498	2,153,701	565	2,428,200	
August	522	2,179,068	551	2,287,367	
July	478	1,910,229	553	2,253,495	
June, 1927	498	2,093,540	566	2,334,128	

Philadelphia					
(Including Chester, Wilmington and the whole Philadelphia port district)					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	95	254,304	65	167,100	
February	88	239,768	53	152,545	
January	81	206,710	54	141,408	
December	81	206,171	42	108,935	
November	78	193,676	43	99,965	
October	94	211,988	63	136,371	
September	77	183,481	50	95,898	
August	99	235,657	70	158,305	
July	83	186,182	53	110,614	
June, 1927	95	213,122	66	180,861	

Boston					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	108	348,026	67	194,408	
February	100	301,053	50	160,330	
January	102	328,779	61	197,133	
December	91	255,980	52	169,150	
November	98	320,340	63	178,707	
October	107	380,655	69	244,265	
September	114	375,509	83	243,244	
August	149	441,819	96	285,255	
July	147	401,008	103	326,695	
June, 1927	155	344,548	99	242,957	

Portland, Me.					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	20	58,110	22	69,400	
February	18	44,067	17	47,032	
January	21	57,757	18	48,294	
December	23	50,380	23	55,280	
November	25	42,291	26	40,248	
October	32	60,920	35	71,587	
September	33	68,688	32	61,227	
August	33	61,873	32	58,949	
July	37	62,890	35	55,144	

Providence					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	7	27,855	6	26,037	
February	3	6,656	4	17,543	
January	4	20,931	4	18,817	
December	4	11,618	5	21,125	
November	4	16,374	2	9,920	
October	7	24,736	1	2,875	
September	4	12,240	4	14,109	
August	5	27,235	1	4,035	
July	11	37,384	5	17,628	
June, 1927	3	12,559	5	15,930	

Portland, Oreg.					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	29	111,490	49	170,655	
February	23	86,160	35	120,026	
January	37	130,578	50	183,254	
December	34	134,562	61	223,472	
November	38	141,747	70	247,571	
October	57	208,738	70	254,270	
September	59	211,182	79	291,920	
August	32	117,116	47	167,715	
July	31	110,966	35	119,824	
June, 1927	24	91,564	33	118,631	

Note: The figures given in this table are for direct entrances and clearances. Additional vessels in foreign trade enter and clear from and to other American ports after original entry and before final departure. At the port of Philadelphia, for instance, additional vessels in the foreign trade in this category were 60 of 237,626 net tons entered and 71 of 236,986 net tons cleared for the month of March.

Baltimore					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	128	391,117	137	408,927	
February	134	412,110	135	399,729	
January	116	354,307	120	374,617	
December	129	406,889	132	398,587	
November	103	330,488	110	323,666	
October	118	365,876	116	350,509	
September	116	355,924	130	402,528	
August	131	390,713	138	408,083	
July	128	384,450	130	368,096	
June, 1927	125	375,204	125	376,019	

Norfolk and Newport News					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	18	39,102	89	209,171	
February	13	32,925	77	206,630	
January	14	29,931	75	202,997	
December	17	35,439	78	207,636	
November	23	51,726	78	206,978	
October	25	65,640	77	214,940	
September	26	67,249	87	240,899	
August	32	71,356	92	222,502	
July	42	112,442	77	201,882	
June, 1927	34	61,041	82	190,228	

Savannah					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
December, 1928	30	93,773	36	114,845	
November	30	98,308	35	99,838	
October	41	119,953	39	112,138	
September	36	108,866	40	113,431	
August	30	90,063	30	93,080	
July	33	96,625	30	87,055	
June	27	67,095	30	75,193	
May	37	108,549	37	102,757	
April	30	87,296	26	108,150	
March, 1927	37	102,732	39	114,871	

Key West					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	119	96,746	112	94,408	
February	121	91,928	109	88,819	
January	110	85,955	123	85,750	
December	103	91,299	101	90,557	
November	112	92,152	107	89,156	
October	80	87,814	83	88,587	
September	69	86,793	72	88,480	
August	72	81,247	70	84,132	
July	78	84,790	79	84,186	
June, 1927	84	97,585	85	97,535	

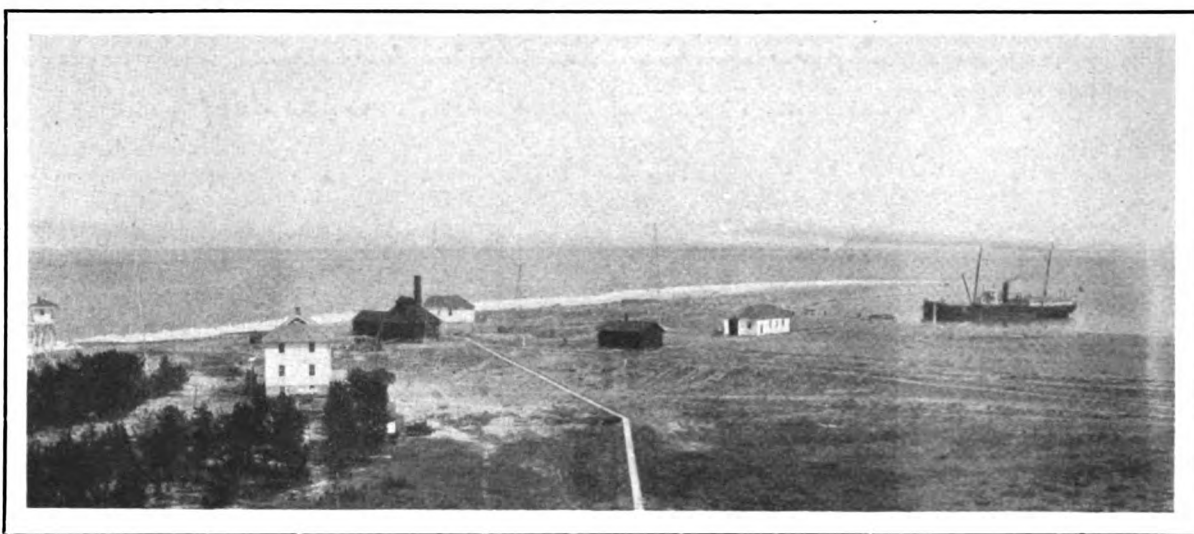
Mobile					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	107	242,444	97	246,634	
February	94	271,569	83	228,210	
January	117	309,644	82	216,381	
December	75	189,231	73	178,068	
November	75	161,528	79	176,885	
October	89	210,973	97	237,282	
September	80	173,618	89	195,714	
August	92	194,609	84	184,655	
July	94	198,668	89	190,965	
June, 1927	97	206,410	84	165,649	

Seattle					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	46	191,601	46	196,371	
February	54	210,176	53	207,173	
January	50	206,743	62	239,133	
December	56	232,726	58	241,398	
November	59	231,003	68	264,841	
October	68	268,666	69	272,875	
September	62	238,554	58	227,096	
August	109	218,218	102	203,902	
July	45	183,023	40	162,121	
June, 1927	38	159,687	39	162,632	

New Orleans					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	265	669,301	282	720,407	
February	238	627,445	236	616,772	
January	271	725,935	272	697,301	
December	240	671,775	258	714,455	
November	226	586,013	236	609,299	
October	260	698,720	265	710,922	
September	232	613,772	240	632,593	
August	276	797,128	265	672,392	
July	250	615,826	241	580,228	
June, 1927	248	606,501	267	750,937	

Charleston					
(Exclusive of Domestic)					
Month	Entrances		Clearances		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	29	79,789	27	67,472	
February	26	74,244	27	73,168	
January	32	83,419	52	150,260	
December	27	65,379	25	63,354	
November	32	77,911	33	81,978	
October	37	95,473	36	95,070	
September	39	102,374	39	101,044	
August	39	108,022	35	92,227	
July	19	41,460	20	44,633	
June, 1927	25	67,366	24	62,132	

Galveston					
(Exclusive of Domestic)					
Month	—Entrances—		—Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1928	35	75,924	47	121,106	
February	27	63,696	52	147,378	
January	32	83,419	52	150,260	
December	34	79,353	51	142,779	
November	43	103,885	66	179,841	
October	69	184,154	99	290,370	
September	70	200,578	97	301,105	
August	76	214,876	95	274,670	
July	77	204,961	93	260,481	
June, 1927	67	178,331	75	199,410	



Whitefish Point, Lake Superior—One of the Most Important Light Stations on the Great Lakes

Radiobeacons Aid the Navigator

Twenty Radio Broadcasting Stations Now Send Code Signals to Ships on the Great Lakes—A Safeguard to Navigation

By Charles A. Park

TO THOSE who have not kept pace with developments of the past two or three years in safeguards for the mariner, it is somewhat startling to be told that there are now 20 radio broadcasting stations in the United States waters of the Great Lakes, established and operating solely in the interest of safe navigation. Four times each day, regardless of weather conditions, these stations send out their message for a half hour period, and with the large fleet of lake vessels in full operation, the listening audience is large. It is during fog, snowstorms or thick weather when they are continuously operated, however, that their broadcasts are most eagerly sought and fullest of meaning. The average broadcast listener is entirely unconscious of their presence as they operate on a wave length near 1000 meters, well above the wave lengths used for entertainment broadcasting.

In June 1925, a radiobeacon was established on Lake Huron lightship marking the beginning of this system of aid to navigation on the Great Lakes. Later in the same season additional radiobeacons were placed in

service at Buffalo, Detroit River light-house, Detour, Whitefish Point, Manitou Island and Devils Island, all strategic locations. Many other stations have followed in the past two seasons. As will be evident from the chart here published, the stations now cover the lakes in a comprehensive manner.

As the subject is still new, a few re-

marks as to the purpose of these radiobeacons and the manner in which that purpose is served will not be out of place. It is first necessary to be acquainted with the radiocompass or radio direction finder which is the instrument that is placed on the vessel and which enables the ship's officer to utilize the radiobeacon broadcasts.

The radiocompass consists briefly of a loop antenna mounted over the ship's pilothouse with axis extending downward and carrying sight wires over a magnetic compass, dumb compass, or gyro repeater in the pilothouse. This loop is connected to a radio receiver in the pilothouse and can be revolved by the observer, swinging the sight wires over the compass. The observer, after picking up the desired station, revolves the loop and notes the varying strength of the signal until a point is reached where the signal is lost entirely. At this point the loop is perpendicular to a line connecting the ship and the station heard, and the sight wires are so placed that they point directly to the station. By referring to the compass beneath the sight wires, the ship's officer is therefore able to read his direction from the station. The point of minimum or no signal is very sharp and bearings thus taken are accurate, as a

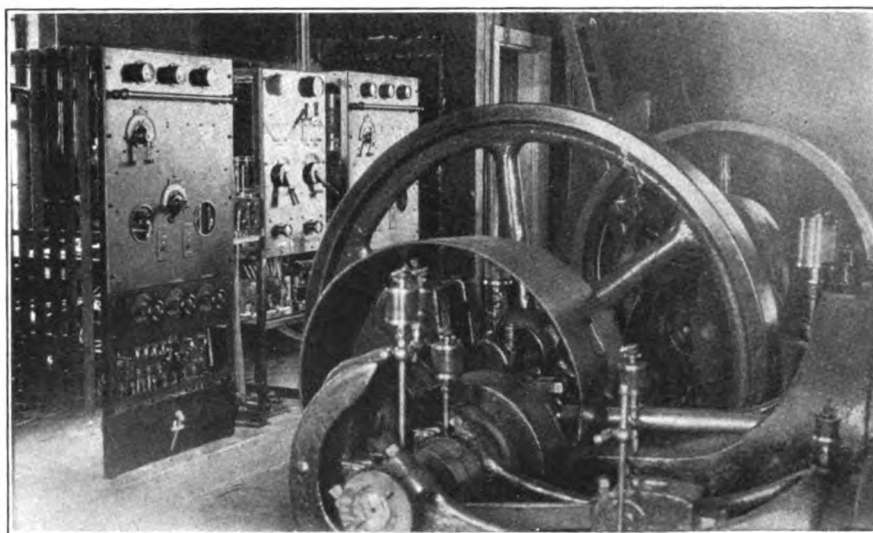


DEVIL'S ISLAND, LAKE SUPERIOR. RADIO-BEACON AERIAL CONNECTED TO LIGHTHOUSE

The author, Charles A. Park, is superintendent of lighthouses, eleventh district, Detroit. This article was prepared for MARINE REVIEW at the request of the editor.

rule, to within one or two degrees. As the radiobeacon is broadcasting continuously in fog or thick weather, the vessel may obtain bearings as often as desired, in passing, and determine distance off in the same way as if visual bearings were taken on a lighthouse. By reading bearings on two or more stations, favorably located, an accurate plotting of position may be made. When it is considered that these bearings may be taken with perfect ease at distances of 150 and 200 miles, and practicably without regard to weather conditions, the importance of this aid to navigation may be readily realized. Even though position by dead reckoning may be extremely uncertain because of wind and sea, radio bearings on a known station give to the vessel master the assurance and information he needs to keep clear of dangerous shoals or to seek the shelter of protecting harbors.

At the time the radiobeacon was installed on Lake Huron lightship, only two commercial vessels in these waters were equipped with the radiocompass. A demonstration by the United States lighthouse service to interested vessel owners and officials, held at Detroit river light in November, 1925, had much to do in emphasizing the value of this aid to navigation. The total number of vessels now equipped with the radiocompass

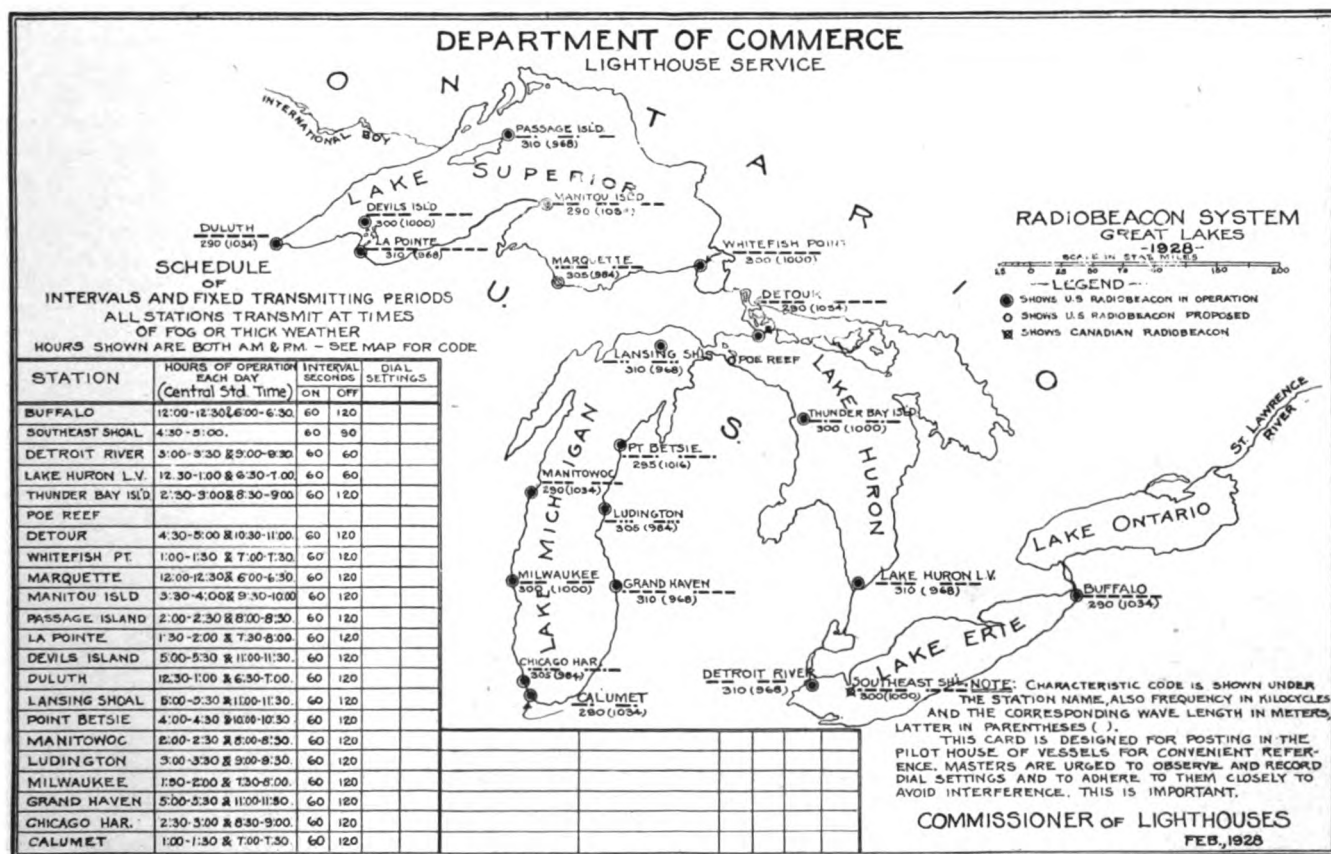


RADIOBEACON TRANSMITTERS, DETROIT RIVER LIGHTHOUSE

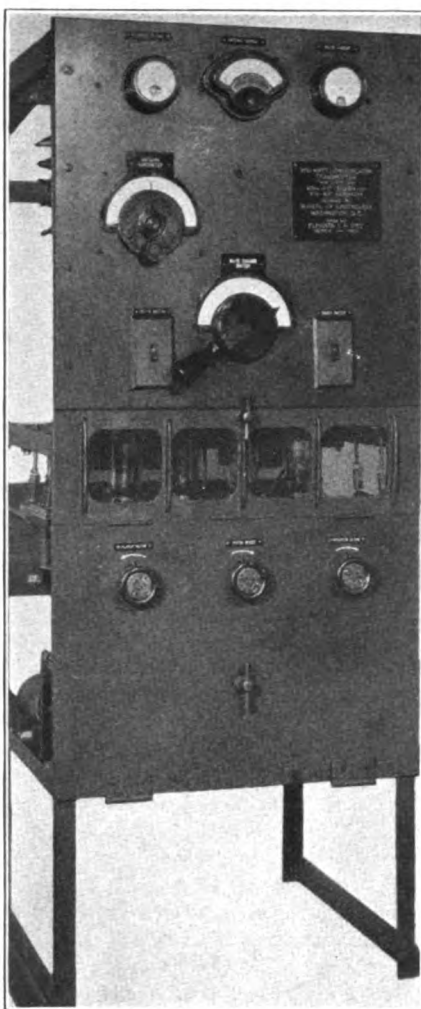
is approximately three hundred—a fine illustration of the progressive spirit of lake vessel owners and their eagerness to take advantage of all aids for the protection of life and property.

The radiobeacon consists usually of a complete duplicate installation of electric generator, radio transmitter and automatic code machine connected to an aerial suspended between towers at a light station. The power of the transmitter on the lakes is 100, 200, or 500 watts as the needs may require. Convenient means are provided for promptly switching from one trans-

mitter, one generator, or one code machine to another in case of trouble, to avoid breakdown of service. The codes used are various combinations of dots and dashes of the Morse telegraph code, so chosen as to make identification of the sending station easy. In all cases the equipment is located at lighthouse stations and is operated by the personnel of the station. The fact that this important duty has been assumed without increase in force and that almost no operating failures have resulted, speaks very well indeed for the char-



ALL RADIOBEACON STATIONS ON GREAT LAKES. ALSO CHARACTERISTIC CODE, WAVE LENGTH, TIME OF OPERATION, ETC.



200-WATT TRANSMITTER OF TYPE USED IN THE LIGHTHOUSE SERVICE

acter of the men who make up the body of lighthouse keepers on the Great Lakes.

The code machine is entirely automatic in its operation thus making the services of a radio operator unnecessary. The code is formed by a series or combination of short and long segments on a revolving code wheel making short or long brush con-

tacts as the wheel is revolved, to produce dots and dashes. This wheel is revolved by an electric motor through reduction gear which also drives a contacting cam designed to open and close the circuit so that any desired combination of "on" and "off" operating intervals may be obtained. Much of the equipment utilized at these radiobeacons is manufactured within the lighthouse service.

Until late in the fall of 1927, all radiobeacons had been operating on a wave length of 1000 meters. At that time an important test of varying frequencies was made to determine the effect in elimination of interference, and as a result the wave lengths of stations have now been permanently staggered between 950 and 1050 meters, the band authorized for these beacons. It is anticipated that this action will largely eliminate interference troubles previously encountered at times.

The Great Lakes are peculiarly adapted to this type of aid to navigation and it is gratifying to note that although somewhat late in starting, progress in the installation of the radiobeacons and radiocompasses in this locality has been extremely rapid. When it is considered that each important freight steamer may pass a given station between 60 and 70 times in the course of a season and under present conditions is able to obtain a check on its position by radio bearing at almost any hour of the day or night, regardless of weather conditions, the importance of the system to this vast commerce can be understood.

The system of radiobeacons has been installed and is operated by the United States lighthouse service of the department of commerce. The bureau of lighthouses at Washington is in charge of Mr. G. R. Putnam, commissioner of lighthouses, and the service on the Great Lakes is directly in



DETROIT RIVER LIGHTHOUSE—VESSELS ARE GUIDED BY RADIO TO THE MOUTH OF THE DETROIT RIVER FROM LAKE ERIE

charge of superintendents of the tenth, eleventh and twelfth lighthouse districts with headquarters at Buffalo, Detroit and Milwaukee, respectively.

Load Line Committee

The secretary of commerce has organized a committee to study load line legislation for American vessels in order to make recommendations for appropriate legislation. The national council of American shipbuilders appointed H. C. Towle of the Bethlehem Shipbuilding Corp. as its representative on this committee. Members will also be appointed by the shipping board, steamship owners, American bureau of shipping and marine underwriters. Legislation is now being proposed to authorize the secretary of commerce to establish regulations in accordance with the practice of other maritime nations for load waterlines for American freight vessels of 250 gross tons or over engaged in foreign trade and for similar vessels of other nations sailing from American ports.



LEFT—PASSAGE ISLAND, LAKE SUPERIOR. VESSELS AIDED BY RADIOBEACON AT THIS STATION IN PASSING BETWEEN ISLE ROYALE AND PASSAGE ISLAND. RIGHT—LAKE HURON LIGHTSHIP. FIRST RADIOBEACON ON GREAT LAKES ESTABLISHED ON THIS VESSEL, JUNE, 1925

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME	DATE	NATURE	PLACE	DAMAGE RESULTING
Alexandra	Dec. 19	Fire	Little Current	Total loss	J. A. Moffett	Dec. 15	Aground	Price Island	Floated
Atlantic	Dec. 14	Hvy. weather	At sea	Shell, plate-leaking	John J. Hoff	Dec. 27	Aground	Seine River	Floated
Atsuta Maru No. 6	Dec. 17	Ashore	Point Gray	Floated	John C. Hildebrand	Dec. 27	Collision	Off Thimble Shoals	Bow
Antonio Lopez	Dec. 29	Aground	Santiago Chan.	Not stated	Jamal	Dec. 1	Collision	Kaiser Wilhelm Canal	Badly
Ambrose No. 4	Jan. 3	Ashore	New York	Floated	Katie E	Dec. 14	Sank	Stapleton	Not stated
Amakura	Jan. 1	Collision	London	Not stated	Kurt Hartwic Seimers	Dec. 28	Stranded	Oporto	Damaged
Alvena	Jan. 5	Disabled	Off Cape Hatteras	Leaking	London	Dec. 24	Struck	Panama Canal	Not stated
Amisia	Nov. 29	Collision	Gravesend	Stem	Lake Inglenook	Dec. 30	Collision	Vineyard Sound	Not stated
Anglo Columbian	Dec. 1	Collision	Tyne	Not stated	Lysaker	Dec. 1	Aground	Nr. Lyngoer	Propeller
Auk	Dec. 7	Collision	Nr. Antona	Forepeak	Lena Petersen	Dec. 5	Collision	Danzig	Starboard
Anvall	Dec. 14	Collision	Rotterdam	Bulwarks					how
Alec	Dec. 16	Sank	Thames Wharf		Lesto	Dec. 7	Stranded	Endelave	Floated-leaking
Anna, YM 34	Dec. 23	Disabled	At sea	Machinery	Linea III	Dec. 26	Explosion	Marseilles	Badly
Arantzazu Mendi	Dec. 23	Collision	Scheldt	Forepeak	Mary P. Mesquita	Dec. 14	Aground	Off Fort Hamilton	Floated
Arctc	Dec. 28	Struck pier-head	Newlyn	Stem; plates	May Archer	Dec. 13	Disabled	Providence	Machinery
					Magna	Dec. 19	Collision	St. John, N. B.	Hull
Bothwell	Dec. 16	Collision	Hamburg	Badly	Marmara	Dec. 27	Collision	Gulf of Mubania	Not stated
Birchbank	Dec. 18	Aground	Off Fort Mifflin bar	Floated	Mineola	Jan. 5	Ashore	Old Providence	Leaking
Bessie	Dec. 21	Disabled	Off Nauset	Boiler-leaking					
Brant	Dec. 23	Collision	Off Castle Island	Port bow	Mercedes Lacroize	Nov. 28	Struck bank	Parana River	Rudder
Bothwell	Dec. 15	Collision	Brunshausen	Badly	Monte Bianco	Nov. 29	Ashore	Nr. Brunshausen	Not stated
Bebington	Dec. 20	Collision	River Mersey	Damaged	Margot	Nov. 28	Collision	Humber	Windlass;
Barmoor	Dec. 25	Collision	Gravesend	Starboard					bow plating
				bow	Maggie	Nov. 29	Collision	Kaiser Wilhelm	Damaged
Britannia	Dec. 28	Hvy weather	Gravesend	Sank				Canal	
Commercial Spirit	Dec. 16	Aground	Hacketts Point	Floated	Mary Watkinson	Dec. 1	Collision	Off Lizard	Sank
Colima	Dec. 16	Disabled	Lat. 52N lon. 33W	Boilers	Margaux	Dec. 5	Ashore	Nr. Gluckstadt	Floated
Clan MacKinley	Dec. 17	Disabled	Bermuda	Machinery	Mississippi	Dec. 15	Collision	Antwerp	Port side
Capo Vado	Dec. 27	Aground	English Channel	Rudder	Maid of Lemnos	Dec. 15	Aground	51.02N. 1.07E.	Floated
Cornelia Maersk	Dec. 25	Collision	River Thames	Starboard	Mallock	Dec. 23	Disabled	48.58N. 5.29W	Leaking
				bows	Nils	Dec. 14	Collision	Off Red Hook	Plates
City of Alexandria	Dec. 1	Struck break-water	East London	Forepeak	Nome City	Dec. 19	Disabled	So. of Santa Barbara	Lost prop.
Clan Maci wraith	Dec. 8	Collision	River Scheldt	Port side					
Cape St. Agnes	Dec. 9	Not stated	Singapore	Leaking	Newbrough	Dec. 22	Disabled	St. Thomas	Machinery
				badly	Norfolk	Dec. 30	Collision	Vineyard Sound	Damaged
Columbia	Dec. 12	Collision	Off Columbia River	Stern-leaking	Natirar	Jan. 2	Aground	Pamet-River	Floated
				ing	North Bend	Jan. 5	Ashore	Columbia River	Total loss
Craigolive	Dec. 14	Collision	Victoria Channel	Bow plates	Nina	Dec. 29	Ashore	Amoros Sinope	Forepeak
Cairnsmore	Dec. 14	Collision	Victoria Channel	Bow plates	Orazio	Dec. 5	Disabled	Talcahuano	Propeller
Chi-Ping	Dec. 11	Struck rocks	Wanhien Harbour	Damaged	Oscar	Dec. 21	Fire	Great Yarmouth	Total loss
Cordelia	Dec. 19	Aground	Buenos Ayres	Floated	Osterdal	Dec. 22	Ashore	South Jetty	Floated
Corbet	Dec. 20	Collision	River Mersey	Damaged	Ocean Lover	Dec. 29	Struck pier	Lowestoft	Stem
Castor	Dec. 21	Ashore	River Weser	Floated-leaking	Pat	Dec. 29	Collision	Houston	Sank
					President Monroe	Jan. 9	Aground	Hikoshima Island	Floated
Christian Michelsen	Dec. 28	Aground	Narvik	Floated-leaking	President Polk	Jan. 10	Fire	New York	Nos. 1 and 2
									hold
Charles	Dec. 26	Aground	Off Fidra Island	Stern; lost rudder	Pax	Nov. 29	Collision	Kaiser Wilhelm	Damaged
								Canal	
Crawford Castle	Dec. 29	Disabled	Gravesend	Propeller	Philoctetes	Dec. 4	Struck dolphins	Hamburg	Damaged
Doris Crane	Dec. 20	Fire	San Francisco	To water's edge					
					Phillipa	Dec. 7	Collision	Southend-on-Sea	Holed
Diana Dollar	Dec. 30	Disabled	Colon	Lost rudder	Portland	Dec. 8	Leaking	St. Bride's Bay	Sank
Domira	Dec. 31	Collision	Sandy Hook	Not stated	Pearl	Dec. 20	Ashore	Garretstown	Total loss
Dago	Jan. 3	Collision	New York	Stem					
Dehance	Jan. 2	Fire	North River	Sank	Pyrope	Dec. 22	Stranded	Kettleess Point	Not stated
Doris	Nov. 29	Collision	River Mersey	Sank	Parkhill	Dec. 24	Collision	River Scheldt	Port side
Docteur Pierre	Nov. 29	Ashore	Nr. Brunshausen	Not stated	Risco	Dec. 2	Struck bank	Panama Canal	Forepeak;
Benoit									bottom
Dearne	Dec. 2	Aground	Goole Bight	Not stated	Rudmore	Dec. 6	Collision	South Shields	Not stated
Eglantine	Dec. 13	Ashore	New Orleans	Floated	Ravens Point	Dec. 7	Collision	Off Mersey Bar	Bow
Estland	Dec. 19	Collision	St. John, N. B.	Stem	Seminole	Dec. 13	Aground	River Mersey	Floated
Eddie Theriault	Dec. 22	Foundered	Pemera		San Jacinto	Dec. 16	Disabled	Galveston	Floated prop.
Eva F. Parsons	Jan. 5	Struck ledge	Parrboro	Bottom	Surailco	Dec. 22	Ashore	Nr. Seattle	Floated
Elisabeth	Dec. 6	Collision	Brunsbittelkoog	Bows	Svielj	Dec. 27	Collision	Gulf of Mubania	Sank
Eurasia	Dec. 5	Ashore	Off Dragor	Floated	Sally Wren	Dec. 22	Disabled	Off Cape Hatteras	Leaking
Erica	Dec. 14	Collision	Rotterdam	Port bow	Schouwenhank	Dec. 1	Collision	Flushing	Damaged
Eden Force	Dec. 16	Collision	Nr. Terneuzen	Port side	Silverelm	Dec. 10	Collision	Calcutta	Damaged
Equity	Dec. 16	Collision	Nr. Terneuzen	Not stated	Stella Lykes	Dec. 8	Aground	Trinidad de Cuba	Not stated
Elster	Dec. 20	Disabled	Nr. Hogland	Rudder	Somersby	Dec. 8	Ashore	Maryport Bay	Lost prop.
Ella	Dec. 22	Aground	Trekanten	Not stated	Sussex Belle	Dec. 15	Ashore	Yarmouth	Total loss
Eugena Cambanis	Dec. 22	Aground	North Sea	Hold	Sarah Ann	Dec. 16	Ashore	Lambeth	
					Sweet May	Dec. 16	Sank	Porthoustock Quay	
Fredheim	Dec. 6	Collision	South Shields	Not stated	Spartak	Dec. 22	Aground	Antwerp	Floated
Fredman	Dec. 21	Collision	Brunsbittelkoog	Damaged	Start	Dec. 29	Hvy Weather	Gravesend	Sank
Guillemot	Nov. 29	Collision	Gravesend	Port bow; hawsepape	Tampa	Dec. 17	Disabled	Bermuda	Machinery
				Damaged	Turid	Nov. 30	Struck rock	Valencia	Leaking
Gascoyne	Dec. 16	Collision	Perth	Damaged	Tasmania	Dec. 25	Collision	Gravesend	Not stated
Glen Derry	Dec. 18	Collision	Antwerp Roads	Starboard side	Toyos Maru	Dec. 28	Ashore	Tsushima Island	Sank
					Uku	Nov. 30	Ashore	Nr. Buddonness	Badly
Hillsborough	Dec. 17	Fire	Off Staten Island	Not stated	Victorious	Dec. 15	Ashore	Nr. Yokohama	Floated
Horace Luckenbach	Dec. 19	Disabled	Portland, Ore.	Rudder	Vesta	Dec. 21	Aground	Oporto	Floated
Herman Frasch	Jan. 5	Aground	Key West	Floated	Veinte Julio	Dec. 22	Collision	Island of Aruba	Sank
Hera	Nov. 29	Stranded	Hasle	Not stated	W. L. Steel	Jan. 2	Struck bank	New Orleans	Rudder
Haviland	Dec. 1	Collision	Flushing	Not stated	West Katan	Jan. 3	Aground	Cherry Island Flats	Floated
Hebble	Dec. 6	Collision	Brunsbittelkoog	Bows	Wyoming	Jan. 4	Fire	New York	Total loss
Heimdal	Dec. 1	Aground	Kraakoy	Propeller-floated	West Modus	Jan. 5	Collision	Galveston	Damaged
					West Ira	Jan. 9	Fire	New Orleans	Not stated
Haliartus	Dec. 15	Collision	Brunshausen	Badly	Wm. Th. Malling	Dec. 1	Collision	Kaiser Wilhelm	Badly
Hatchmere	Dec. 21	Sank	Island Magee					Canal	
Hohenstein	Dec. 22	Aground	Antwerp	Floated	Woolgar	Dec. 16	Collision	Perth	Plates
Ile of Surrey	Dec. 13	Disabled	Newbern	Main shaft; lost propeller	West Vlaanderen	Dec. 18	Collision	Antwerp Roads	Starboard side
Irland	Jan. 3	Collision	Sandy Hook	Bows	Zealand	Dec. 7	Collision	Off Mersey Bar	Holed amidships
Iris	Dec. 3	Collision	Danzig	Not stated					
Itabira	Dec. 12	Collision	Bahia	Sank					

Personal Sketches of Marine Men

William LeRoy Emmet, Engineer and Inventor, General Electric Co.

By Herbert R. Simonds



AFTER years of experience at sea, as a naval officer he turned his attention to the electric propulsion of ships and became a leader in this field of marine engineering.

HIS contact with marine engineering through electric drive made it possible for his company to build geared turbine machinery for 300 merchant ships and 50 destroyers.

HE OBTAINED the navy department's approval to a proposal to install electric drive in one of its ships. Now, electric drive is specified for all large war ships in the navy.

WITH many years of active sea life behind him, William LeRoy Emmet was well equipped to take charge of the developments of electric ship propulsion after joining the engineering staff of the General Electric Co., Schenectady.

Born at Pelham, N. Y. in 1859, he was educated at schools in Canada and Maryland and at the United States Naval academy at Annapolis. He served in the navy as junior lieutenant and later as navigator on the U. S. S. JUSTIN. In this latter position, he served through the Spanish-American war.

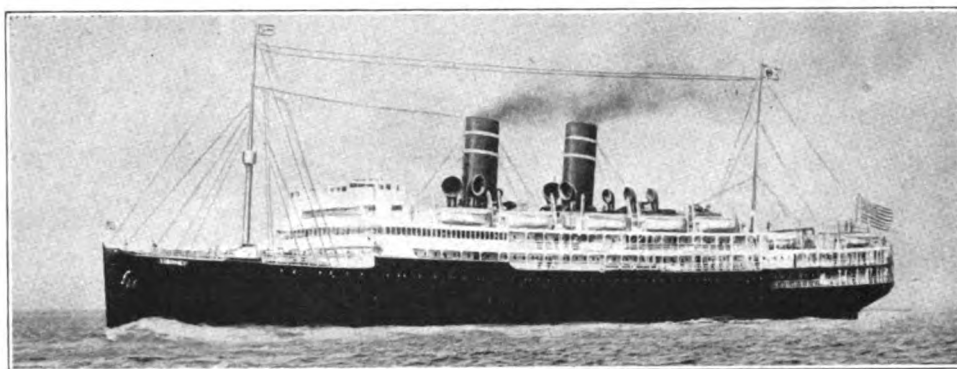
After leaving the sea he entered the service of the Sprague Electric Railway and Motor Co. and soon afterward became associated with the General Electric Co. His first work with this latter company was the design and application of large alternating current machinery. He invented and developed the oil switch, which is now an important part in all electrical installations. He discovered a principle of engine governor control, which is essential to success in parallel operation of engine driven alternating generators.

The call of the sea was still strong however, and he soon was engaged in development work which had to do with the marine field. In 1908 he thought the development of the steam turbine and generator had reached the point which made this combination excellently adapted to ship propulsion. With this idea uppermost and a lot of sound principles to back it up, he went to the navy department and after two or three years of intensive educational work, he convinced some of the department heads that electric propulsion was at least worthy of consideration. He was authorized to install his turbo electric drive on the COLLIER JUPITER. This proved such an immediate success, that the navy at once adopted the policy of using electric drive on all new large war ships.

Work in connection with electric propulsion of ships brought to Mr. Emmet's attention, the need for large efficient gear reduction units. Accordingly, he threw his energy into the solving of this new problem. Under his direction and much through his own designing, the Alquist method of gearing was worked out for ships. While Mr. Emmet was in the midst of these varying studies, the war broke out and it was due in a large extent to his able assistance that the General Electric Co. was able to produce geared turbine machinery for some 300 merchant ships and 50 destroyers.

Following the war, Mr. Emmet turned his attention to the development of the Emmet mercury vapor process. This is the first serious attempt to extend the thermodynamic range afforded by steam into higher temperatures by the use of a different working fluid. His work has met with success. A two thousand kilowatt mercury turbine has been operating for over a year at Hartford, Conn. and the operation shows a marked saving in fuel cost. At present the General Electric Co. has nearly completed the construction of a ten thousand kilowatt mercury turbine. The great economies indicated for this new type of power plant makes it attractive for ships.

Mr. Emmet is a council member of the Society of Naval Architects & Marine Engineers, a member of the National Academy of Sciences, the Naval Consulting board, and a member of engineering societies. He has received honorary degrees and medals, but is a modest man and lives a quiet life in a conservative district of the residential section of Schenectady. He is unmarried and like his former associate, the late Dr. Charles Steinmetz, he surrounds himself with a group of interesting and promising boys. One of his chief recreations is golf and into this, he throws himself with the same vim and enthusiasm which he habitually shows in his work.



*The Palatial Ward Line Steamship "SIBONEY" of the
New York and Cuba Mail Steamship Co.*

The "SIBONEY"

is *also* lubricated with

TEXACO MARINE TURBINE OIL H

The S. S. SIBONEY is owned and operated by the New York and Cuba Mail Steamship Co. (Ward Line). She is a sister ship to the S. S. ORIZABA.

Both ships have seen two years in the U. S. Army transport service. Both have seen eight years service as a passenger ship between New York and Havana, Cuba.

This is a hard run, made weekly, under every conceiv-

able climatic and operating condition.

TEXACO MARINE TURBINE OIL H was installed on the S. S. SIBONEY (as it was on the ORIZABA) *10 years ago*. Since that time, (with the exception of make-up) the original oil has never been changed! *Not once* during 700,000 miles of travel!

TEXACO MARINE TURBINE OILS H & M are known for their durability under the most intensive operating conditions.



Correspondence invited

Stocks kept at Ports throughout the World

THE TEXAS COMPANY

Marine Sales Division

Dept. K5, 17 Battery Place, New York City

Offices in Principal Cities

There is a Texaco Lubricant for every purpose Aboard Ship

Marine Legislation

(Continued from Page 19)

will both be conferees on the part of the senate and practically assures the fact that an agreement can be reached in conference.

While the White bill as it was reported out of committee is far from what the shipping interests of the country want, it is said that they are glad to get this much and they feel that it is a long step in advance.

As the White bill came from committee it omitted Title II of Mr. White's original bill as it was introduced in the house which was explained at some length in a recent issue of MARINE REVIEW. This title dealt with cargo vessels and the maintenance of essential cargo routes.

The White bill as reported to the House declares that the policy and the primary purpose declared in the merchant marine act of 1920 "are hereby confirmed." In connection with the sale of ships by the board the bill as reported states that "The United States shipping board shall not sell any vessel or any line of vessels except when in its judgment the building up and maintenance of an adequate merchant marine can be best served thereby, and then only upon the affirmative vote of five members of the board duly recorded."

Under the heading of remodeling and improving the bill provides that "In addition to its power to reconstruction and repair vessels under section 12 of the merchant marine act, 1920, as amended, the board may remodel and improve vessels owned by the United States and in its possession or under its control, so as to equip them adequately for competition in the foreign trade of the United States. Any vessel so remodeled or improved shall be documented under the laws of the United States and shall remain documented under such laws for not less than five years from the date of the completion of the remodeling or improving and so long as there remains due the United States any money or interest on account of such vessel, and during such period it shall be operated only on voyages which are not exclusively coastwise."

Provisions Made for New Vessels

In connection with replacements the bill says:

"The necessity for the replacement of vessels owned by the United States and in the possession or under the control of the board and the construc-

tion for the board of additional up-to-date cargo, combination cargo and passenger, and passenger ships, to give the United States an adequate merchant marine, is hereby recognized, and the board is authorized and directed to present to congress from time to time, recommendations setting forth what new vessels are required for permanent operation under the United States flag in foreign trade, and the estimated cost thereof, to the end that congress may, from time to time, make provision for replacements and additions. All vessels built for the board shall be built in the United States, and they shall be planned with reference to their possible usefulness as auxiliaries to the naval and military services of the United States."

At Low Rate of Interest

All of Title III of the bill as it was reported to the house is devoted to the construction loan fund and it takes up in detail under subheads, terms and conditions of the loans, and the increase of the construction loan fund. The bill allows the shipping board to set aside from sales and from other sources of income moneys amounting to \$125,000,000, which amount is to be known as the construction loan fund. This money the board is empowered to loan to aid persons citizens of the United States "in the construction of vessels of the best and most efficient type." The conditions include that these ships are to be of the most up-to-date type. The bill provides further that such ships shall be documented under the laws of the United States and shall remain documented under such laws "for not less than twenty years from the date the loan is made, and so long as there remains due the United States any principal or interest on account of such loan."

It is specifically provided that "no loan shall be made for a longer time than twenty years." In connection with the interest payable on these loans the bill provides that:

"All such loans shall bear interest at rates as follows, payable not less frequently than annually: During any period in which the vessel is operated exclusively in coastwise trade, or is inactive, the rate of interest shall be as fixed by the board, but not less than 5¼ per centum per annum. During any period in which the vessel is operated in foreign trade the rate shall be the lowest yield (to the nearest one-eighth of 1 per centum) of any government obligation outstanding at the time the loan is made by the board, as certified

by the secretary of the treasury to the board upon its request. The board shall prescribe rules for determining the amount of interest payable under the provisions of this paragraph."

It is provided also that no loan shall be for a greater sum than three-fourths the cost of the vessel to be constructed or of the cost of reconditioning. Various other conditions are also written into the law in this loan provision as regards insurance and the like. Dealing with an increase of the construction loan fund the bill provides that enough money shall be available in addition to that mentioned above so that the fund shall be "equal to \$250,000,000." It provides also that "the construction loan fund shall continue to be a revolving fund. Repayments on loans from the fund shall be credited to the fund, but interest on such loans shall be covered into the treasury as miscellaneous receipts."

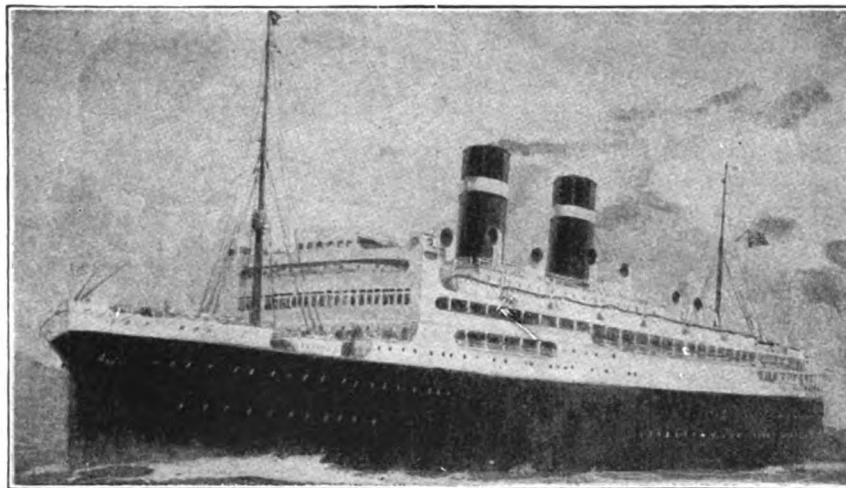
The bill also goes into great detail as regards the carrying of mail and the contracts for this. The provisions are similar to those in the original White bill and they have already been explained at length in a previous issue of MARINE REVIEW.

Specific provision is made also in the bill for the taking over and purchase by the United States of certain classes of vessels for national defense. Title VI of the bill is devoted to the insurance fund while Title V deals with the merchant marine naval reserve.

Shipping Men Who Testified

Among those who appeared before the committee at the hearings mentioned above were the following: Edward C. Plummer, vice chairman of the United States shipping board; Laurance R. Wilder, Transoceanic Corporation of the United States; Henry Herbermann, president of the Export Steamship Corp.; H. G. Smith, vice president of the Bethlehem Shipbuilding Corp.; Representative Will R. Wood, of Indiana, author of a merchant marine bill; Andrew Furuseth, president of the International Seamen's Union of America; Representative J. M. Wainwright of New York, author of some merchant marine amendments; John Nicolson, of the United States shipping board; William F. Yates, president of the National Marine Engineers Beneficial association; Homer L. Ferguson, president of the Newport News Shipbuilding and Dry Dock Co.; Henry R. Sutphen, vice president of the Transmarine Corp., Newark, N. J.; Warren F. Purdy, president of the U. S. P. & I. Agency Inc.; E. J. F. Coleman, ma-

The author of this article, Lynne M. Lamm, is Washington correspondent for MARINE REVIEW.



S.S. California

Smart Looking

- □ -

Built to wear---
"LIKE A
BATTLESHIP"

S.S. California, largest merchant ship ever built in the United States, is in every respect comparable to the finest transatlantic ships now in service. She will run between New York and California ports, her turbo-electric drive giving a speed of 18 knots.

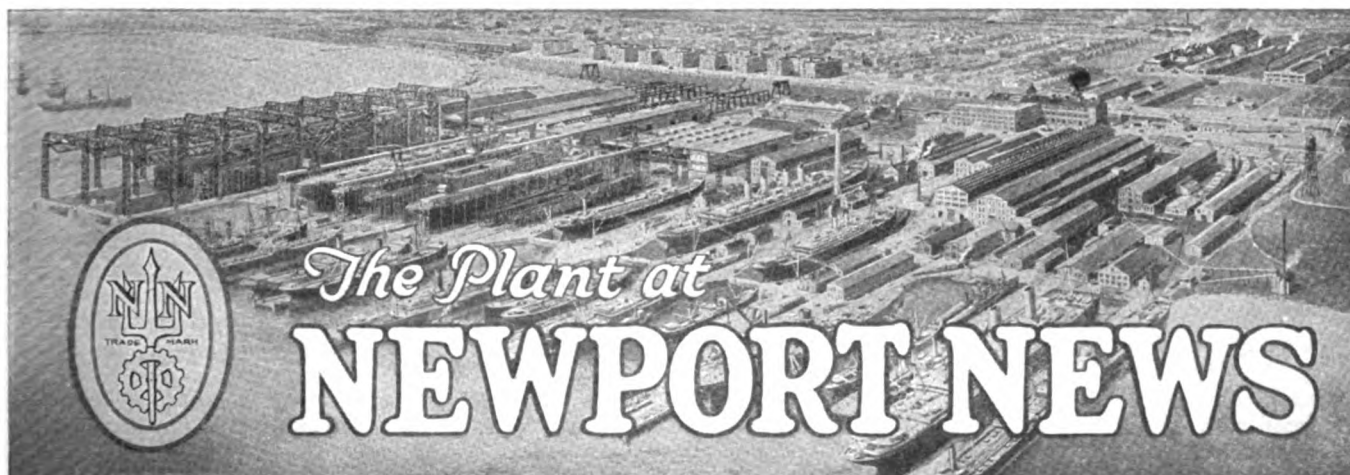
Newport News Shipbuilding and Dry Dock Company ranks as one of the finest organizations in the world, in facilities for construction and repairs.

Our yard facilities are unequalled, labor is plentiful and good, and the climate permits outdoor work the year 'round.

If you desire fine ships, or are in need of quick dependable repair service, our Engineering staff will be glad to consult with you—without cost or obligation.

NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY

NEWPORT NEWS, VIRGINIA, U. S. A. - NEW YORK, 233 BROADWAY



rine underwriter of New York city; H. B. Walker, president of the American Steamship Owners association; Walter J. Peterson, of the Pacific American Steamship Owners association; Emmet J. McCormack of Moore & McCormack; A. B. Barber, of the United States chamber of commerce; W. Irving Glover, second assistant postmaster general; Rear Admiral Richard H. Leigh, chief of the bureau of navigation, United States navy; William A. D. Evans, chairman of the merchant marine committee of the national association of manufacturers; A. H. Thacher, counsel of the association of marine underwriters of the United States; Commodore Herbert Hartley, formerly commander of the LEVIATHAN; William R. Hedge, president of the Boston Insurance Co. and others.

New German Liners

A good deal of mystery surrounds the building of the two North German Lloyd liners, BREMEN and EUROPA. It is reported that these vessels will be the longest and fastest liners afloat. They are to be launched in June this year and will enter the New York-Bremen service in April 1929. Blohm and Voss is building the BREMEN at Hamburg and the EUROPA is building at the Weser yard, Bremen. Each liner will have an approximate gross tonnage of 46,000. The length is to be approximately 987 feet, the speed is said will average $27\frac{1}{2}$ knots. This will make them the fastest liners in the world and would regain for the North German Lloyd the speed record of the Atlantic which was lost with the advent of the LUSITANIA and MAURETANIA of the Cunard line. It

is understood that high pressure, superheat, geared turbines will be used for motive power in both vessels. Each vessel is expected to cost approximately \$11,500,000 to build.

Cory Official Resigns

Joseph S. Jones, vice president of, and for ten years associated with, Charles Cory & Son, Inc., manufacturer of marine equipment, has resigned. He entered the service of this company as engineer and since



JOSEPH S. JONES

that time, has occupied the position of general commercial manager, assistant to president and general manager; vice president, director of sales and engineering, which position he held up to April of this year when his resignation took effect. He has been responsible for the creation and development of various types of signal and communicating appliances.

Automobile Ferries

As this is written the prospects seem excellent for carrying out the plans of the Hudson River Navigation Corp., operator of the Hudson River Night line, for the building of two vessels designed to carry passenger automobiles and motor trucks up and down the Hudson river. A request has been made to the shipping board for a loan of \$1,500,000, or one-half the anticipated cost of two vessels. The war department, according to the Hudson River Navigation Corp., declares the proposal acceptable as these vessels "would be of value to the government in an emergency for the transportation of military motor vehicles or similar cargo by sea along the coastal shores or on rivers."

From the Editor's Mail

To the Editor:

I noted in the March, 1928, issue of MARINE REVIEW a letter from C. J. Jefferson, in which he discussed, briefly, marine stokers and pulverized fuel. Although I have the most sincere admiration and respect for Mr. Jefferson, coupled with deep appreciation for the really excellent work that he and Commander Evans have done in developing pulverized fuel for scotch boilers, and although I make no claim to expert knowledge concerning combustion, I do feel quite sure that Mr. Jefferson has been misinformed regarding stokers, when he says, "That a much inferior grade of coal can be used by the pulverized method than can be used on stokers."

It is quite evident from the open minded tone of the letter, that no issue is taken as to the efficiency or reliability of the stoker for ships, the question raised being one of relative fuel values and costs for the two mechanical methods of burning coal under water tube boilers.

We agree with Mr. Jefferson that pulverized fuel offers the only practical method of mechanically burning coal in scotch marine boilers, and that the test and actual sea results attained up to date seem to warrant its wider adoption in that type of steam generator. It is also a well known fact that when burning coal on stokers, the best results are not obtained when using a mixture of different sizes. To illustrate, it is not good practice to burn large lumps in conjunction with very fine coal, or to try and burn a large range of

sizes at the same time. It is feasible and practical, however, to burn slack alone, or a fairly large sized coal alone, as long as they are not mixed. The results being obtained with a tremendous number of stokers, manufactured by several reputable manufacturers, and burning practically every grade of coal throughout the entire country, and in every line of industry, are too conclusive to be ignored. After considering and weighing the constants and variables with the different fuels and types of stokers, the known results show that, although rather extravagant claims were at first made for the extreme cheapness of the fuels that could be burned, with the various pulverizer systems, those which are operating most economically with the least maintenance are burning the better grades of coals, with the low ash percentages, low moisture content and high ash fusion temperatures. As a matter of fact, everything we know about the two systems to date, indicates quite definitely that stokers will burn cheaper coal economically, with less repairs and much smaller power input per ton burned, than will the pulverizer systems.

In conclusion, I feel constrained to express the wish that the United States shipping board might authorize Commander Evans and Carl Jefferson to make as exhaustive and thorough tests with a stoker-fired water tube boiler as they have completed with the pulverized-fuel scotch boiler.

CARL J. LAMB.

YOU CANNOT BE "TOO FAR AWAY" TO GET TODD SERVICE

THE long arm of Todd Service reaches all coast lines of the United States. Atlantic, Gulf and Pacific.

The New York City, Mobile, Ala., New Orleans, La., and Seattle, Wash. yards of this organization are strategically located to render complete Service in Building, Repair, Conversion, Reconditioning, and Emergency work on transoceanic or coastal craft for important marine owners and operators.

TODD SHIPYARDS CORPORATION

25 Broadway, New York

Twenty-Two Floating Docks—Two Graving Docks—Twelve Shipways

PLANTS

Robbins Dry Dock & Repair Co.
Erie Basin, Brooklyn, N. Y.

Tietjen & Lang Dry Dock Co.
Hoboken, N. J.

Todd Engineering Dry Dock & Repair Co.
New Orleans, La.

Todd Dry Dock, Engineering & Repair Corp.
Brooklyn, N. Y.

PLANTS

Todd Shipbuilding & Dry Dock Co., Inc.
Mobile, Ala.

Todd Dry Docks, Inc.
*Harbor Island
Seattle, Wash.*

Todd Oil Burner, Ltd.
London, England



British Shipbuilding

(Continued from Page 32)

Sunderland, although the repairing yards there are not fully employed. Lord Ritchie, chairman of the Port of London authority, recently stated at a meeting of the board that for the ten months ended Jan. 31 last there was a total tonnage of 13,085,171 using the authority's docks. This is the highest figure for such a period in its history. The demand from manufacturers and shippers for greater facilities and lower rates at the British ports continues strong. They point out that orders from overseas countries are diverted to the continent on account of the lower charges obtainable.

Shipping Conditions Only Fair

Reports from shipping centers vary. From Liverpool it is stated that there has been a fair demand for coal, and rates for early loading to the Mediterranean have been fairly steady. In the homeward market the Plate grain section has shown some improvement after a marked depression. The North American markets are quiet. A fair amount of business has been done from the Gulf for lumber; the north Pacific has shown a steadier tone. Inquiries are in the market for Cuban sugar. In the eastern trades some interest has been displayed from Australia for grain, but other markets are dull. Mediterranean and Bay ore chartering has been done within narrow limits. Reports from the Tyne are unsatisfactory. The tonnage of shipping idle in the Tyne is larger than a year ago, and the freight market is dull owing to the scarcity of orders. Tonnage is plentiful, but owners are unwilling to make concessions. The accompanying chart of index numbers, compiled from *The Statist*, London, shows that freights have consistently declined from November, 1927, to February, 1928, when the level reached was the lowest since June, 1926.

As this article is being written the Plate grain market shows a healthier position, and there has been some revival of interest for forward tonnage to cover requirements before midsummer. Rates tend to improve in practically all positions and more optimistic views are being taken of the near future. For the present, however, the position of the freight markets as a whole is poor in comparison with the trend of a year ago. Grain River Plate rates are about 22s 6d, with May-June business done at 23s 6d. Interest from the Far

East is expanding, but Near East business is low. There is a marked contraction of inquiry from ports on the Pacific side of America and the freight market there is weak, the low rate of 26s having been quoted for Vancouver wheat. Chartering on Indian and Australian account is spasmodic. Ore shipments from Santander and Bilbao are moderately active. The Danube and Black Sea trades are dull.

The board of trade figures for the first two months of the year show that entrances of vessels at British ports during the period were less than in the corresponding period of 1927, while clearances were slightly in excess this year as regards tonnages. In February this year 4043 vessels of 4,163,048 tons entered British ports with cargoes, and 4524 vessels of 4,753,196 tons cleared with cargoes to foreign destinations. For the first two months of the year a total of 8215 vessels, trading foreign, aggregating 8,741,066 tons, entered British ports with cargoes. This compares with 8593 vessels and 9,088,536 tons in the corresponding period of last year. Of this year's tonnage, 20 per cent came from the Atlantic coast of North America, as against 23.5 per cent in the corresponding period of 1927. The total clearances from British ports in the period considered this year were 9272 vessels of 9,712,272 tons, as compared with 9532 vessels of 9,566,460 tons in the first two months of 1927. Of these clearances, 12.7 per cent went to the Atlantic coast of North America this year, as against 12.5 per cent a year ago.

Coal Exports Are Less

Exports of British coal for the two months ended Feb. 29, 1928, were less than in the same period of 1926 and 1927. The tonnage exported this year was 7,912,331 tons, as against 8,265,735 tons in 1927 and 8,488,048 tons in 1926. Coal shipped for the use of steamers engaged in foreign trade during the first two months of the year was 2,671,456 tons this year, 2,573,246 tons in 1927 and 2,586,798 tons in 1926. The total value of exports of British goods, exclusive of bullion and specie, for the first two months of the year was £136,950,555 (\$675,000,000), as compared with £129,027,407 (\$625,000,000) in the corresponding period of 1927 and £148,157,828 (\$720,000,000) for 1926. As compared with 1927, there was a decrease of about £2,000,000 (\$9,700,000) in the value of coal exports, an increase of about £1,700,000 (\$8,-

250,000) for cotton yarns and manufactures, an increase of £1,400,000 (\$6,800,000) for vehicles including locomotives, ships, and aircraft, an increase of £1,260,000 (\$6,125,000) for machinery, and slightly over £1,000,000 (\$4,860,000) increase for iron and steel and manufactures.

M. S. Wilscox Trials

(Continued from Page 39)

large M. A. N. type diesel engines which have been built in America. It has four cylinders each 27.55 inches in diameter with a stroke of 47.24 inches. Its cooling system is arranged for salt water with the exception of the pistons which are fresh water cooled; the engine housing rests on a heavy bed plate, and in turn supports the lower entablature, to the upper face of which is set the cylinder columns which tie into the upper entablature. The entire design is exceedingly compact and gives to the engine room an unusually spacious appearance.

The hull of the WILSCOX was built by the Oscar Daniels Co. at Tampa, Fla., and is built on the Isherwood system of framing. The trial trip was held under the direction of the shipping board with Capt. R. D. Gatewood as official host. The ship was operated, however, by its regular force of commissioned officers headed by Capt. W. T. George.

The other officers of the WILSCOX are: first officer, S. J. Lee; second officer, Leo Harrington; third officer, Howard F. Lane; steward, Jos. M. Freer; chief engineer, C. I. Rhode; first engineer, W. Elbert; second engineer, H. Casey; third engineer, R. Jenkins; fourth engineer, W. Halliden; electrician, R. W. Brown.

While the placing in service of the WILSCOX ends the shipping board's conversion program of twelve ships, specifications will be out in June for a new conversion program covering eight ships. Of the twelve already completed, six were converted at the Newport News Shipbuilding and Dry Dock Co., Newport News, Va., five at the Bethlehem Shipbuilding Corp., Quincy, Mass., and one at the Tietjen & Lang plant at Hoboken, N. J., of the Todd Shipyards Corp., New York.

Diesel engines for the eight new vessels which are to be converted are now under construction. Two of these are McIntosh & Seymour Corp., two are Hooven, Owens & Rentschler Co., two are Worthington Pump & Machinery Corp. and two are Busch-Sulzer Bros. Diesel Engine Co.

What happens under the fire room floor

The process of extinguishing a fire under the fire room floor with a FOAMITE Generator System is a simple one.

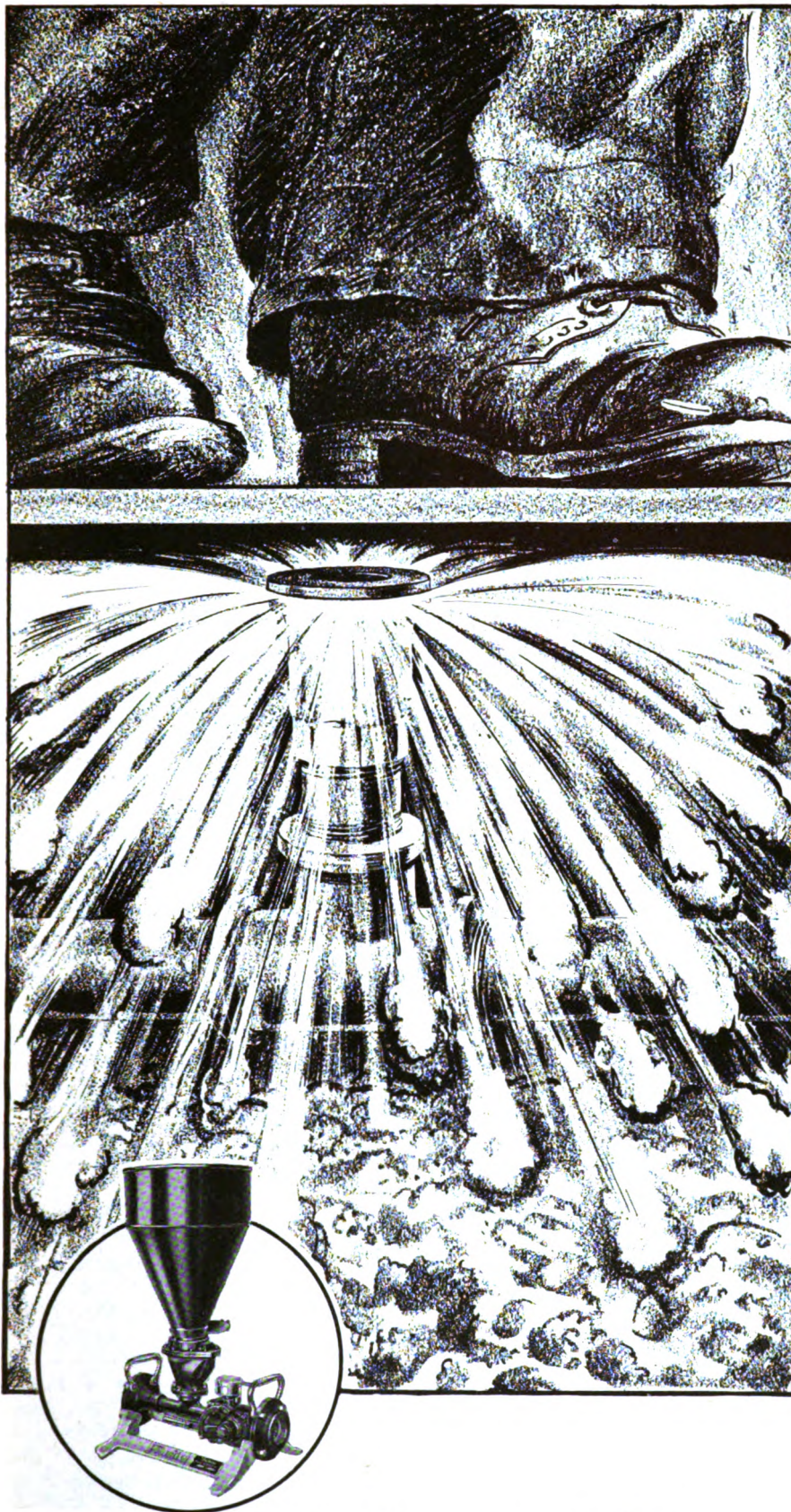
The water pressure is turned on at the Generator, and FOAMITE Generator Powder poured into the Generator hopper until the fire is extinguished.

Under the fire room floor is a simple piping system terminating in distributor heads. *Firefoam*, developed by the Generator, flows through these pipes, pours out of the distributor heads, covers the entire tank top and bilge area, and smothers the fire.

The action is simple, direct, and immediate. The fire is out. Reflash is impossible.

With such a fire protection system you have the advantages of minimum weight and space requirements, with low initial cost, and practically no maintenance.

If you are not fully acquainted with the many applications of the FOAMITE Generator System ask for a demonstration of the Foamite Generator. American-LaFrance & Foamite Corporation, Engineers and Manufacturers, Dept. J3, Elmira, N. Y.



AMERICAN-LA FRANCE & FOAMITE PROTECTION A Complete Engineering Service for Extinguishing Fires

MARINE REVIEW—May, 1928

55

Lake Carriers Meet

(Continued from Page 41)

It was suggested by Mr. Sullivan that a committee be appointed to confer with the underwriters in order to get rates established earlier in the year and in sufficient time before the opening of navigation so that vessel owners might be able to place their insurance in a really competitive market. No action was taken except that the advisory committee will discuss this matter with the view of improving present conditions.

Total contributions from members of the Great Lakes Protective association and from interest on deposits less lay-up returns and cancellation returns for the fiscal year 1927 amounted to \$433,407.79 while the expenses of the association paid, less recoveries, is in the amount of \$370,797.50 indicating an excess contribution in the fiscal year of \$62,610.29. It must be borne in mind that actually at this time only a small percentage of the losses are adjusted and paid, the balance is made up from estimates based on reports received from R. Parry-Jones and from the various subscribers. The present indication of the amount returnable to subscribers is therefore, as stated above or approximately 14.45 per cent of the initial contribution.

The largest losses were sustained by the association in the series of gales, Dec. 6 to 9. The most serious single loss was that of the steamer E. W. OGLEBAY, when she stranded on shot point near Marquette, Dec. 9, resulting in a destructive total loss. The total of this damage it is estimated will amount to around \$260,000. Since 1913, a period of fourteen seasons, only two vessels in the membership of the association have become total losses by reason of stress of weather. The association however, is not satisfied that last year represents the best showing that can be made and the subscribers are urged to take a still more active interest in all matters which will increase safety of navigation.

All officers and members of the advisory committee were re-elected with the exception of C. D. Dyer, who resigned. This vacancy was filled by the election of George M. Steinbrenner. The personnel of the committee follows: J. S. Ashley, chairman; A. E. Cornelius; H. Coulby; George M. Steinbrenner; R. W. England; A. F. Harvey; C. L. Hutchinson; J. T. Kelly; F. I. Kennedy; A. T. Kinney; H. K. Oakes and A. E. R. Schneider. The other officers are George A. Marr,

secretary and attorney in fact A. E. R. Schneider, treasurer; J. A. Armstrong, assistant treasurer and Harvey D. Goulder, counsel.

This year's annual meeting of the Lake Carriers association closed as is the custom with a banquet. There was a large representation of members of the association and guests. Hon. Newton D. Baker, general counsel for the association and former secretary of war acted as toastmaster. In his address Mr. Baker very clearly and briefly outlined the present status of the Chicago lake diversion case before the Supreme court of the United States. The states of New York, Ohio, Wisconsin, Minnesota and Michigan are opposed to Illinois. Acting as a master for the Supreme court, Charles E. Hughes has reported his findings. A summary of his report was published in MARINE REVIEW for December. The Supreme court has now set aside April 23 and 24 for arguments in the case. At this time Mr. Baker will represent the Lake Carriers.

With his customary felicity, Mr. Baker attended to his role as toastmaster and introduced the speakers. Among the guests and speakers were the following: Harvey D. Goulder, Col. John Millis, U. S. A. retired; Col. Spencer Cosby, U. S. A. division engineer, Cleveland; Lieut. Col. E. J. Dent, U. S. A. district engineer Detroit; Roscoe House, Charles A. Park and C. H. Hubbard respectively superintendents of the tenth, eleventh and twelfth lighthouse districts at Buffalo, Detroit and Milwaukee. C. J. Jefferson, head of the fuel conservation section of the United States shipping board; Isaac De Young, general superintendent St. Mary's Falls canal, Sault Ste. Marie; Commander G. A. Beall, U. S. N., branch hydrographer, Sault Ste. Marie; Lieut. Andrew P. Lawton, branch hydrographer, Cleveland; Frank T. McArthur, superintendent St. Mary's Falls canal, Sault Ste. Marie, Mich.; and Major W. H. Slaughter, surgeon in charge of United States Marine hospital, Cleveland.

Seminole in Fast Run

The motorship SEMINOLE arrived in New York, March 29 after making an exceptionally fast run of 38 days from Calcutta. The Roosevelt Steamship Co. is the operator of this vessel. Other shipping board converted diesel vessels in the New York-India-Australia service are the SAWOKLA, the UNICO, WEST HONACKER, TAMPA and CROWN CITY.

Cunard Line Report

The report presented at the fifty-first annual meeting of the Cunard line directors in the Cunard building, Liverpool, April 4, showed a profit of £659,748 for 1927 after allowing for income tax interest on debentures, depreciation, etc., compared with a similar figure for 1926 of £516,329.

Lloyd's New Quarters

(Continued from page 34)

coves, at which four or half a dozen diners could sit and discuss their affairs over a meal.

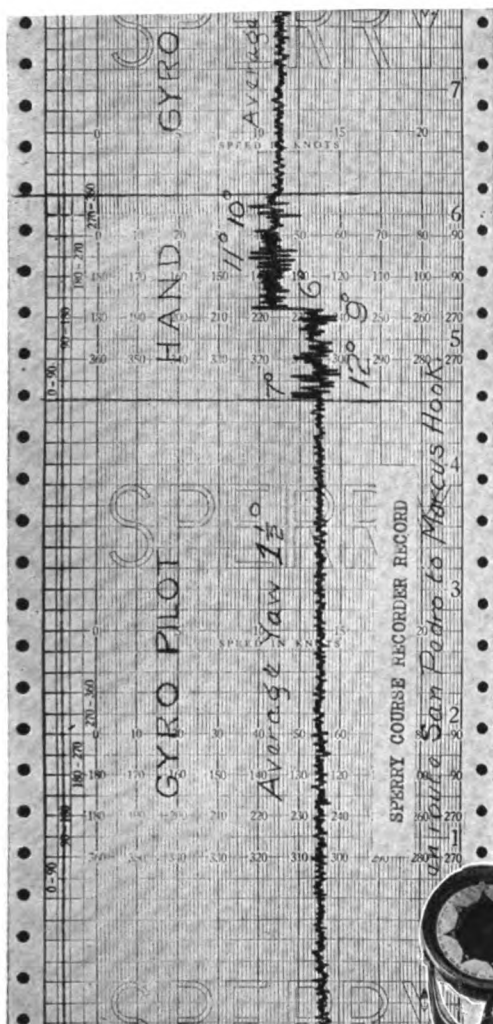
The records are still one of the principal features of Lloyd's and up to the end a very large part of the premises was occupied entirely by ponderous books which were written up hour by hour as information came in. It is only recently that the card system of filing has been adopted, and even now it is not complete.

In addition to keeping these records the premises in the Royal exchange were used for the editing and printing of Lloyd's list, a daily newspaper that is the direct descendant of old Edward Lloyd's first venture in that line, Lloyd's Daily index, which gives the movements of every sea-going ship, Lloyd's Loading list and many other publications. These publications are not to be confused with Lloyd's Register book, which is prepared and published in a different part of London by a concern which is quite distinct although of course affiliated. Lloyd's Registry of Shipping was founded in the 'twenties to survey ships and to prepare a classified list for the use of the underwriters.

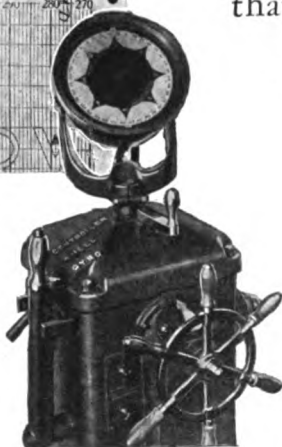
The old quarters in the Royal exchange were steeped in tradition, from the fact that the attendants were always called "waiters" to the announcement of every item of great importance under the big ship's bell that was recovered from the wreck of the frigate LUTINE, which was lost while carrying a valuable cargo of specie and which was a heavy blow to the underwriters. As many as possible of these traditions and features are being carried on in the new building, with such modifications as are necessitated by the rush of modern business and the desire for additional comfort. But the committee would never agree to any complete break with the traditions of the past, and it is these traditions that go far towards making and maintaining the reputation of Lloyd's all over the world.

GOOD STEERING PAYS

The increasing number of Steamship Companies using Sperry Gyro-Pilots shows that the economies of automatic steering have been proven.



A record made by a Sperry Course Recorder showing the vast difference between ordinary hand steering and Gyro-Pilot steering. The Gyro-Pilot is not only able to make a better course, but actually accomplishes this with the use of much less rudder.



THE regularity with which fuel bills make their appearance has spurred every vessel operator to seek ways and means for economizing on this item. Under insistent demands great improvements have been made in propulsion machinery. Power thus efficiently generated by modern engine room equipment is delivered to the propeller and from there it becomes the responsibility of the Captain and his staff to make the most economical use of it. The modernness of the bridge equipment determines this—accurate navigation and good steering are the fundamentals. The Captain knows that it is only with the accurate Sperry Gyro-Compass and the Gyro-Pilot, with its consistently good steering, that he can be expected to make this economical use of the power delivered to him at the propeller. *Good steering pays.*

The Sperry Gyro-Compass and Gyro-Pilot are adaptable to any ship as indicated by the great number and variety of vessels now equipped.

THE SPERRY GYROSCOPE COMPANY

BROOKLYN

CLEVELAND PHILADELPHIA SEATTLE

NEW YORK

LOS ANGELES SAN FRANCISCO



Reviews of Late Books

Diesel Engines for Land and Marine Work, by A. P. Chalkley, B. Sc. A. M. Inst. C. E., with an introductory chapter by the late Dr. Rudolph Diesel; cloth, 320 pages, 5¼ by 8¼ inches, published by D. Van Nostrand Co. Inc., New York, and furnished by MARINE REVIEW, Cleveland, for \$8.00, postpaid and in Europe by the Penton Publishing Co., Ltd., Caxton House, London, for 40 shillings.

Many books have been written on the diesel engine but it is safe to say that no author has been more closely associated with the study of this type of power than Mr. Chalkley. This is the sixth edition revised and enlarged and like the first and all intermediate editions it contains an interesting introduction by the late Dr. Rudolph Diesel. This introduction is dated December, 1911, not so long before the famous inventor's mysterious death.

The first edition of this work was published 16 years ago and at that time the largest diesel engine in service was about 1000 brake horsepower. At the present time there are internal combustion motors of this class developing 15,000 brake horsepower. In 1911 the first ocean-going diesel engine ship began its maiden voyage. In 1927 the tonnage of motorships built throughout the world totaled a little more than 50 per cent of all tonnage built.

The author by making a complete revision has brought the subject matter of his book up-to-date. He has added many new descriptions and illustrations of engines particularly of those operating on the double acting principle. There is also much information dealing with modern developments in design and material for all types. Mr. Chalkley has succeeded in this, the sixth edition of his work in presenting a comprehensive outline of the present position of the diesel engine in all its applications. He has particularly emphasized its marine service.

The book is divided into 13 chapters. Attention has been paid to the general theory of heat engines with special reference to diesel engines. Also to the action and working of the diesel engine. A chapter is devoted to the general construction of the internal combustion type of engine. Practical information is given the reader on the installation and operation of engines. Space is also devoted to outlining proper tests for

diesel engines and in a thorough discussion of this type of power for marine work. No less than four chapters are devoted to a detailed description of the construction of various types of diesel marine engines; the two-cycle single acting, the four-cycle single acting, the two-cycle double and the four-cycle double acting.

Details of design for diesel engines are fully treated. In the last part of the book appears an interesting discussion on the future of the diesel engine, its present day and future possible application. In the appendix is printed in full a copy of Diesel's original patent. The inventor's original specification is dated Aug. 27, 1892.

* * *

Tunnard's Tanker Tables, a hand book on oil calculations for oil tank officers, by B. Tunnard, cloth 46 pages, 5 x 7 inches, published by Brown, Son & Ferguson, Ltd., Glasgow, and furnished by MARINE REVIEW, Cleveland for \$1.25 postpaid and in Europe by the Penton Publishing Co., Ltd., Caxton House, London, for 5 shillings.

The officer on a tanker must have a knowledge of how to prepare his tanks, to keep his tank lid packing and butterflies in good order and condition, to load and discharge his ship without mixing the oils and above all to know the effects of temperature changes and how to calculate the quantities loaded or discharged.

This book is very useful in showing in detail the reason for every part of the calculations as well as explaining the temperature problem. Examples are given in the book to show how the loading ullages can be calculated and a definite quantity loaded into each tank.

To the marine engineer the tables are valuable in showing the correct method for calculating the amount of bunkers received or expended. Tables are given for the weight in pounds per cubic foot and gallon and also the number of cubic feet, gallons and barrels per ton of oil for different specific gravities. Altogether this little book will be found very useful to the officer or landsman who is responsible for the carrying and stowage of oil cargoes.

* * *

Marine Steam, by the Babcock & Wilcox Co.; cloth, 281 pages 7 x 10 inches; published by the Babcock & Wilcox Co. Copies are distributed

directly by the company, free to interested and responsible persons.

We have given this treatise on steam, in our review columns, the dignity of a book which it deserves rather than classing it as a commercial catalog. This book covers in a very interesting and instructive manner the entire subject of steam applied to marine purposes. This is the third edition.

While several chapters are devoted to description of the different designs of the company's marine boilers, oil burners and other equipment, the greater number of chapters contain much information of value to those engaged in the design and operation of steam-driven vessels, students of naval architecture and marine engineering.

The chapter headings clearly indicate its scope, beginning with a brief history of the marine water tube boiler; properties of water; boiler feed water; pumps and feed water regulators; air heaters; steam; table of properties of saturated steam; moisture and steam superheated steam; properties of air and gases; combustion; flue gases and analysis; coal and its combustion; liquid fuels and their combustion; and efficiency and capacity of boilers. The book is profusely illustrated with pictures of all types of vessels. There are also many tables and diagrams.

* * *

Industrial Turmoil, by Fred B. Jacobs, 300 pages, 4½ x 7¼ inches, cloth, published by the Burton Publishing Co., Kansas City, Mo., and furnished by MARINE REVIEW for \$2 and in London by the Penton Publishing Co., Ltd., Caxton House, Westminster, London for 10s.

The author has relied more on a strong plot than fine writing, but he has succeeded in creating a stirring romance of New England life which centers in a small manufacturing village. His early sea experience is reflected vividly in the account of how several rum pirates stole a fine steam yacht and ran a cargo of rum from the West Indies to the Massachusetts coast. The story also reveals that the author has an intimate knowledge of manufacturing conditions, and in picturing the labor struggle, on which a good part of the tale hinges, he takes a broad view. Mr. Jacobs' story makes interesting reading. Born and reared in New England, he understands the class of people portrayed and has made the story alive and readable. This book is also of value as a description of industrial condition.